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LECTURES

ON THE

AMERICAN ECLECTIC

SYSTEM OF SURGERY.

BY

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EDITED WITH NOTES AND ADDITIONS, AND A TREATISE ON THE VENEREAL DISEASE,

BY

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WITH OVER ONE HUNDRED ENGRAVINGS ILLUSTRATING THE PRACTICE OF SURGERY.

CINCINNATI:
SCUDDER AND McCARTHY, PUBLISHERS.
1866.

17573

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5451.8

CINCINNATI:
Moore, Wilstach & Baldwin, Printers.

PREFACE TO SECOND EDITION.

Hill's Eclectic Surgery has held a high position in the opinion of our physicians, as a strictly practical work, which could be placed in the hands of a student with the certainty that he would not forget the paramount importance of remedial means in the exaggerated luster usually given to Operative Surgery. As a guide to the successful practice of surgery, it has gained a well-deserved and lasting reputation. It has been out of print for eight years, yet there has been a constant demand for its revision; and it is to supply this want that the present edition is published.

The Editor has not felt at liberty to make any change in the text, but has added such notes as seemed necessary to bring it up to the present time. In addition, a lengthy treatise on the Venereal Disease has been added, which, he hopes, will fully meet the wants of our practitioners on this subject.

PREFACE.

WHATEVER fault may be found with this book, it can not be said that it was not called for; or that it contains nothing but what may be found in other works on the same subject. Without the risk of presumption, as regards himself, the author may safely claim that it presents the medical reader with more new and peculiar matter than any other surgical work, now in the hands of the profession. Mere novelty, however, on such a subject, would be a very questionable claim. The peculiarities of practice here recorded and recommended come with the sanction of experience. It may be necessary to apprise some of our readers that there are throughout this country, thousands of successful *American* practitioners, who in many cases rely on means and measures quite unknown to the profession in Europe, and unmentioned by the old school American writers, who do little but follow the guidance of their trans-Atlantic authorities.

The superior success of the Reformed or American Practice, is in no department more manifest, than in that of Surgery. This is acknowledged in every part of the country where a well-informed Eclectic has established himself. Those who do not call him in for all cases of sickness, are apt to consult him in difficult surgical diseases, that have baffled the skill of others. Though he may not have had many opportunities to display mechanical dexterity in great operations, he is known as exercising the truly "healing art," which often renders operations unnecessary.

This is the distinctive merit of our practice. So far as regards Operative Surgery, that is, the merely mechanical and destructive part of the practice, we can not pretend to any very considerable improvement, except that of showing how, in a great many cases, we can dispense with operations altogether, even where they are usually looked upon as indispensable.

Operative Surgery is after all, merely mechanical, in as far as it is distinguished, *as it is too much*, from Medical Surgery. Any good mechanic, by becoming also a good anatomist, is qualified as a skillful operator. The eminent men of the past and present day, who have brought that branch of the medical art to its present state—where it seems to require and be susceptible of little improvement—deserve all honor; far be it from us to detract, in the least, from their well-earned fame. There is no situation where knowledge seems more divine, than where it steps in between death and disease, and snatches the victim from the former by superseding the latter. Every medical man should know when to take the responsibility of such interference, and be able to do it, whenever necessary. We hold that no man is morally justified in practicing medicine, without such a knowledge of anatomy and operative Surgery, as to qualify him to operate in every case of emergency. Still we can not but condemn the ambitious eagerness of some old, as well as young Surgeons, to *cut*, in preference to resorting to more rational as well as humane measures; and we desire, as far as can be, to correct that wondering ignorance of society, which perpetuates the evil by withholding the greater meed of approbation, which is due to the conservative Surgeon, and often bestowing patronage and applause upon skillful but reckless operators, who really deserve the severest censure.

"The active aid of operative Surgery," remarks Professor Gibson, when speaking of the efficacy of general remedial means in exostosis, "instead of being regarded with horror, and as an exercise of skill, often ostentatious and unnecessary, is frequently employed before general remedies are even tried, and resorted to under circumstances where benefit can not be expected to result. Whoever attends a European Infirmary will be struck with the diversity and multiplicity of operations, performed upon the most trivial occasions. Will it be credited, that the illustrious father of American Surgery, during a practice both hospital and private, of forty years, and more extended than that of any individual of our country, has very seldom had to resort to amputation? It may be asked what became of his patients? I answer, *they have been cured by general and local means*."—[*Institutes Surgery*, *volume II*, *p.* 429.]

These and similar admonitions from humane and reflecting minds have not been without their effect on the public, as well as *a part* of the profession. Among the more striking changes of public sentiment that mark the present age, a growing jealousy has of late been observable as to all the supposed necessary evils of medicine and medical means. The blood-stained hand of the learned Surgeon has begun to excite the same aversion, as the bloody hand of the laureled soldier. The former may be a philanthropist, and the latter a patriot; but each is suspected of being too proud of his prowess to be over scrupulous as to the occasion for its display. Intelligent people generally seek the opinion of those who are not professed operative Surgeons, before consigning their limbs and risking their lives, or those of their friends, in the hands of operatives. The fact that so many have been saved from the knife, after having been condemned to its "tender mercies," has had its due effect. It is now known in many parts of the country that there are American

Surgeons who can *cure* the great majority of those cases for which operations were formerly deemed indispensable.

The eminent success of those who have aimed at remedial Surgery, has created a demand for a more extended knowledge of the means used. The want of text-books for students, and works of reference for practitioners, developing the resources alluded to, has long been a subject of complaint. Notwithstanding that they generally used different means, and relied on different principles of practice, students and practitioners have still had to resort to the old works.

The author's aim has been to present the practical resources of the healing art, with such fullness as will enable the beginner clearly to understand every subject, and find the directions a sufficient guide in every day practice. He has at the same time endeavored to be brief and comprehensive, that the work might not be too voluminous. While all that is most peculiar to the American Eclectic Practice has been given fully, the measures more commonly resorted to have not been overlooked. In the Operative part, though many of the descriptions are brief, they are amply sufficient to enable the practitioner who has an adequate knowledge of anatomy, to undertake practical Surgery.

INTRODUCTION.

PRACTICAL RESOURCES—GENERAL AND LOCAL.

INASMUCH as the superior success of the Reformed Practice of Surgery depends, to a considerable extent, upon its peculiar *measures* and *remedies*, I have thought a short chapter on these subjects necessary. The practitioner should be fully impressed with the importance of these measures, and well informed as to the modes of applying them. A neglect of these resources will often result in failure; and a wrong mode of applying them may do positive harm. The use, the abuse, and the still more common neglect of *bathing*, illustrates this position. No remedial and hygienic means are more generally available, and capable of being made to exert a more beneficial influence. On the other hand, its power for evil as well as good is not less apparent. It requires skill and knowledge to use rightly simple cold or warm water, and still more vapor and medicated baths. Much may be learned by the judicious practitioner from the results and peculiar processes of Hydropathy. As, however, the efficacy of the "wet sheet," "wet bandage," etc., are now generally understood, I shall begin with a mode of using cold or warm water, which may generally be recommended with great advantage and which I call

THE HAND BATH.

This I recommend as a substitute for the "sponging" or "washing" sometimes referred to by medical writers. In fact, it may be considered a substitute for any or all other modes of applying fluids to the surface of the body, whether they be cold or warm, simple or medicated.

As it regards the use of water the invariable precaution should be adopted of avoiding to apply it so as to give the patient a general chill or produce a too slow reaction. By proceeding in the following manner, all danger is obviated. One or two quarts of water being ready in a wash basin, the patient, if able, and about to bathe himself, should strip entirely naked. If there be no current of cold air, he need not fear the exposure. The "air bath," as Franklin called it, will do him almost as much good as the water. He should take care, however, to have his *feet* protected from the cold floor by a carpet or woolen cloth of some kind. Let him then apply the water, not with a wet cloth, or sponge, but with the bare hand, rubbing briskly, as if the part were to be cleansed. The face and neck should be first gone through with. After well wet-rubbing each part, dry it with a crash towel, and then dry-rub it with the hand again, till a red glow of the skin is got up. After the neck and face, treat one arm in this way; then the other. Then proceed to the front of the chest, as low as the diaphragm, being careful not to wet too large a surface at a time, and to have it dry and warm before proceeding with another part. After the front of the abdomen, the back will come in order, which, most especially, needs thorough drying and rubbing. It may be difficult for the bather, before acquiring some experience, to manage this part of the process rightly. He should take a crash towel, one end in each hand, and draw it briskly to and fro, and up and down, and across the shoulders, stooping a little at the time. Then take the thighs and legs, one by one, and part by part. Last of all, the feet should be treated in the same style, or rather more roughly, drying off one and putting on the stocking before the other is touched with the water.

Two towels, at least, will be required for this process, one getting too wet before it is completed. It must be borne in mind that the whole operation should be gone through with as quickly as possible, consistently with thoroughness, so that the patient or bather will be in active exercise all the time, and generally in a warm perspiration before he can dress himself. Independently of the exercise, there will be no danger of his taking cold, if his feet be kept warm. In some cases, where the feet are naturally cold, or the animal temperature is but feebly sustained, it will be well to place the feet in warm water while the process of bathing is going on.

The superiority of the hand to all other substances for the application of friction has been tested in the development of

Hydropathy. Priesnitz's maxim is, "*Fleish zum fleish.*" Dr. Buchanan's neurological investigations have shown the cause of this superiority of the hand. All who have heard his lectures know that the best possible application for the patient is the hand of one of a vigorous constitution, enjoying perfect health and a serene temperament. Any one who is suffering from chronic disease, or any material disorder or infirmity, should never be permitted to use the hand upon a patient.

The foregoing bath is to be recommended, whenever the patient has sufficient strength for the operation, and is not likely to be injured or fatigued by it.

When the "lye bath" is directed, it is to be understood as the "hand bath."

Cold water is preferable to warm, as a general rule, being likely to set up a vigorous reaction, and much less apt to occasion any chill.

Another advantage of this mode of bathing is, that it can be applied *to* the patient, and *in bed.* In this case the same manner and order of proceeding are to be observed. All other parts but that under treatment may then be kept covered. Friction with the bare hand, I consider here of primary importance; experience having proved the hand to be the best agent for the purpose.

It is the duty of the practitioner to give patients and nurses full instructions on all such particulars as the preceding; and the best possible way of imparting this knowledge (and at the same time often acquiring more for himself), is by example. Whenever practicable, let him go through with the operation himself for the first time, on each patient. Indolence, still more than a false sense of professional dignity, often prevents a full discharge of professional duty in such particulars.

The Douche Bath,

or a stream of cold or warm water from a considerable hight, is often very efficacious in chronic cases. It unites a strong mechanical impression with that of greater cold, from the rapid succession of even moderately cool particles of the fluid. Its application is to debilitated or indurated parts of otherwise vigorous persons What may be considered a modified form of it, and more generally known than the *douche* proper, is

The Shower Bath.

Convenient means for this often accompany the ordinary bathing apparatus, and can easily be made by any tinner. The shower bath is often injudiciously resorted to. It is a powerful means of evil as well as good. Never then direct or sanction this measure, when the patient's reactive powers are not sufficient to bring about a glow of warmth over the whole surface, in a few minutes after he is wiped dry. When this is the case, and the measure otherwise indicated, it will prove a powerful tonic. In cases where the patient feels cold or chilly for half an hour or more after the cold shower, it can not fail to do harm. If such cases be observed, and there are many such where the hydropathic or bathing hobby is rode too carelessly, the cold showers may be seen to debilitate the patient and aggravate his disease. Such patients as those last alluded to, may do much better when using the hand-bath or wrapped up in the cold

Wet Sheet.

Reaction will take place, after this measure, in feeble patients who can not endure any other ordinary mode of *cold* wetting. The perspiration it induces is equable and genial. Our practitioners have found it better, in nearly all cases, to have the sheet wet in weak lye, such as a solution of saleratus. (See Alkaline Bath.) It requires, however, according to the rules of hydropathists, that the patient can bear to have even that washed off by a subsequent cold affusion. This, however, is but an arbitrary doctrine, as the hand bath or the dry towel alone may appropriately succeed the wet sheet. The wet sheet may be regarded, in many cases, as a convenient and excellent substitute for "steaming," or

The Vapor Bath.

Water, in the state of warm vapor, has powerful effects beyond its ordinary properties, in the liquid state. There are various modes of administering the vapor bath. A convenient plan is the following: Place the patient, if able to sit up, in an open bottomed chair, nearly or quite naked, except that a thick blanket is to be thrown around the chair after he is seated. Place his feet in warm water, and give him some warm diaphoretic ptisan. Have a bucket or tub of boiling water under the chair. The blanket must, of course, cover all the patient's body, except his head, and reach to the floor. Increase the amount of vapor, by putting heated bricks into the water, until the patient perspires freely or as profusely as is desired. If it is required and proper to keep the patient long sweating, he should be induced to drink freely of cold water. This will, at the same time, be refreshing, and increase the amount of perspiration. If, however, faintness should come on, remove the patient and lay him in a horizontal position, until he revives. He may then be rubbed off dry or not, as the case may require. It is generally best to let the patient remain in the warm blanket for an hour, or even several hours after the operation, giving him cold or warm drinks, as either may be indicated, so as to continue the sweating, or let it gradually diminish. Finally, wash off the viscid matter generally brought out on the surface, by the *alkaline* hand-bath.

Vapor is a very efficacious remedy in many acute affections. It speedily allays general inflammatory excitement, and helps to remove the inflammatory condition by equalizing the circulation, and by its own specific soothing influence. I am fully aware that the use of this powerful remedial agent has been carried by some to a ridiculous extent. Yet, whatever the *abuse* of the vapor bath, I am free to confess that I would not, on any account, be without the liberty of availing myself of it, or something equivalent, in the treatment of violent acute disease. If it has been too often resorted to by some, it is far too much neglected by Old School practitioners generally. With such ready and powerful means of acting at once on so extensive a depurating organ, with its seven millions of mouths, it is absurd to make a small internal part bear the whole burden of our curative means. By means like the foregoing, we can make a quicker and safer, as well as more powerful impression, on the system at large, and through it on any part diseased, than by any other means in our hands.

While, however, I prize the Vapor Bath thus highly, I am not so wedded to one mode of applying a general principle as to overlook or undervalue others. On the contrary, I am fully impressed with the opinion, that under nearly all, if not all circumstances,

THE ALCOHOLIC VAPOR BATH

is superior to the simple vapor of water. It includes the latter, with all its advantages, in addition to the rare stimulating effects of the alcohol in a state of vapor. A considerable portion of the alcohol rises in *alcoholic* vapor, while the remainder by combustion forms a hot *aqueous* vapor. For convenience and facility of application it is much preferable to the simple aqueous vapor bath. It is thus applied: Place the patient on a solid, instead of an open bottomed chair, with his feet in warm water and the blanket around his neck, and give him some warm diaphoretic tea. Then, instead of the tub of hot water, pour some proof spirits, or any alcoholic fluid that will burn, in a tea saucer or cup, and set it on fire. Take care to keep the vessel under the chair, as near the center as possible, where it will not scorch the patient or the blanket. (A woolen blanket is much the best, as cotton textures are far too combustible, and require peculiar caution.) If the vapor gets too hot to be borne, raise the blanket a little and let in cool air. Let the patient drink warm infusions till the perspiration starts, then give him cold water. If the spirits give out before you get through, be careful in filling the dish not to set fire to your whole supply. (I once knew a man who was administering to another a "rum sweat," to undertake to pour a fresh supply into the burning dish from a large-mouthed bottle, when, of course, the flame was communicated to the whole mass; the bottle bursting, the patient and nurse being both burnt, as well as the carpet, and the house itself narrowly escaping.) After continuing the operation long enough, or until the patient begins to feel fatigued or faint, wrap him in the blanket, and put him to bed. It is generally best to let him sweat there, without disturbance, for several hours. Then wash him off with the weak lye, and change his linen. It is also a good plan to give the patient an alkaline bath *before* the vapor bath.

This mode of inducing perspiration, I deem the best yet known, and often have recourse to it, as well for local as general disease. It does not prostrate so much as the simple water vapor, nor render the patient so liable to take cold afterward.

When the patient is very weak, the alcoholic vapor may be administered while he is still in bed. An apparatus described by Dr. Armstrong, of Dublin, will be convenient for this purpose. It consists of a large spirit lamp, with a funnel inverted over it and attached to a sufficient length of tin tube with joints, so as to be placed and directed where desired; and a sort of cage made of half hoops to cover the patient from neck to foot, and separate the bed clothes some six or eight inches from his body. This cage being placed over the patient, is covered with blankets, and receives the vapor and heat through the tube from the lighted lamp. Dr. Armstrong highly recommends this measure in rheumatic and other inflammatory fevers.

Prof. Buchanan regards it as unnecessary to manufacture any special apparatus for administering the alcoholic vapor bath to the patient in bed. He recommends merely to place a tea cup of alcoholic liquid on a chair by the bedside, and set it on fire. The patient should lie near the edge of the bed, and his bed clothes should be extended over the back of the chair, so as completely to surround the burning alcohol. It will be necessary, however that the chair back or whatever supports the clothes, should be lower than the bed, so as to conduct the ascending vapor toward the patient. It will then enter between the clothes and completely surround his person. By raising the clothes he can give it freer access, or, if too hot, he can lower them and shut it off. To protect the clothing from the blaze and mitigate the heat, a bowl, a soup plate, or any other suitable cover of about twice or thrice the diameter of the cup, may be inverted above it, the edges higher than the edges of the cup, and resting on any suitable support.

It is sometimes desirable and quite convenient to use

Medicated Vapor.

For this purpose, you have only to put volatile articles into the water or alcohol, and proceed as before directed.

Fomentations

are very convenient when we wish to subject a particular part of the body to soothing and relaxing remedies. Among the articles that may be used for this purpose are hops, tansy, hoarhound, elecampane, wormwood, and Roman wormwood, eupatorium, lobelia, stramonium, white oak ooze, etc. Put the articles to be used in a vessel, with water or vinegar, and boil them for a few moments. Then taking out a portion of the herbs, inclose them in flannel cloths, and apply them to the part, as warm as they can be borne. As soon as they begin to get cool remove them, and immediately apply a fresh portion. Or flannel cloths may be wet in the strong decoction and wrung out. A better plan is to have the herbs sewed up in two flannel bags, before being placed in the boiling vessel. If the part to be fomented is a limb, the most convenient plan is to place it over a vessel of boiling liquid, containing the herbs, and cover all with a blanket, so as to confine the steam, which may be kept up or increased to any desired amount by putting in hot bricks. When the hip, testicles, or anus, is the part affected, the patient may be seated over the vessel with a blanket around his loins, and the steam excited in the manner before described.

THE ALKALINE BATH,

is a measure which the reader of the following lectures will often find directed. Of all "medicated baths," though the simplest in principle, I consider it the most important. All physicians know that besides the aqueous matter of perspiration there is thrown out from the cutaneous glands an oleaginous substance, which in many unhealthy conditions of the system concretes upon the surface, and there forms a positive *mechanical* obstruction to perspiration. By this alone sometimes, the escape of a large portion of fluid from the system is prevented, and the effete matter which it was destined to carry off in solution is thrown back upon the different tissues, and acts upon them as an irritant or rather re-enters as a poison. Now simple water, cold or warm, or medicated baths, unless of an alkaline nature, will not effect this oily deposit, concreted as it is into a sort of additional impervious cuticle. With an alkaline wash, however the body makes its own soap, and the skin is thoroughly cleansed and cleared; while its vessels at the same time are gently stimulated in a manner that experience has proven to be highly conducive to the permanent healthy performance of their functions. In a letter I received from a practitioner who was educated in another school, but attended a few of Dr. Morrow's lectures, he says of the lye bath (the knowledge of which he received altogether from these lectures), "from no therapeutic agent have I derived so much benefit in practice as from this. I can not recommend it too highly to the consideration of physicians of every class."

The "lye bath" is generally made in country practice by pouring scalding water on wood ashes. Common pearl-ash, salaratus or soda may be used. As to *strength*, the general rule is that it should produce *no smarting* on any part of the surface, but feel *slippery* to the fingers. When desirable to have it more *stimulating*, this can be effected by adding a little alcohol, tincture of capsicum, brandy or any suitable stimulant. Some addition of this kind is proper in acute congestive disease, when it should also be used *hot*. In most chronic cases it is better administered tepid—cold, however, when the patient's system readily reacts. The general rule is to have it lukewarm.

The Acid Bath,

may be made by adding to the water the common cider vinegar, and using in the same manner as the alkaline wash, with which it is sometimes usefully alternated. Acid bathing is especially indicated in mercurial cases. Acetic, citric, or other vegetable acids are far preferable in most cases to those of mineral origin. Peculiar conditions, however, may indicate sulphuric or nitro-muriatic dilutions.

Revulsives and Counter-irritants.

Under this head sinapisms are a ready resource. But, though the use of mustard is well known, the best mode of using it seems to be little understood. It produces but little good effect when not properly prepared and applied. Unless it acts speedily, so as to produce a shock on the nervous system, its main advantage is lost. Its slow irritating effects are always to be deprecated. They may indeed produce vesication, but *were* this a desirable object, a fly-blister, (with all the objections to which *that* is also liable,) is far preferable to the mustard blister; the latter being always more painful and unmanageable. I have known it to cause death, when produced accidentally on the abdomen of a child, by the mustard being too weak, and hence left on too long. Use only the mustard then that is of the strongest quality, and ground as fine as superfine flour. Wet it with cold water, or water not more than blood-warm, (to prevent loss of strength by evaporation.) Have it of such consistency that it will spread well, without flour, meal, or anything to weaken it. Spread it on a cloth and if necessary warm it before applying. In this state and applied *directly* to the skin, your sinapism will take effect in one or two minutes, and can not be borne more than twenty or thirty minutes, often not half that time. The benefit of the application is inversely as the time required to bring about the proper amount of irritation. No patient will bear with it long enough for any danger of blistering, whereas when weakened by admixtures or intervening cloths, the part becomes accustomed to the burning, and is almost insensibly vesicated.

Strong stimulating *liniments* are often convenient revulsives. They should be covered immediately by wet cloths, to prevent evaporation. The speediest and most powerful effect is gained by covering the part with a liniment, (oil of turpentine, for instance,) and putting a mustard plaster on over it.

As a speedy and efficacious revulsive measure, *dry cupping* should not be overlooked. As it is not always convenient for the practitioner to have his regular cupping apparatus with him, he should avail himself of the common glass tumblers to be found in every house. The smaller ones are generally most to his purpose. Pick some cotton so that it will loosely occupy about one-sixth of the tumbler, and support itself at the bottom when the vessel is inverted, so as not to burn the patient. For this purpose the bottom may be slightly wetted with water or saliva. Flame is to be applied to the cotton, and the tumbler quickly fixed in its place while the cotton is in a blaze. This method is just as efficacious, and not so liable to burn the patient, as that of using spirits. Several cupping glasses applied at the same time will exert a powerful effect upon the nervous system, and strongly direct circulation from the endangered or painful part. This happy effect of cupping is quite independent of scarifying or local bleeding. The blood may be retained under the cups for a considerable time, and is only gradually absorbed, thus acting as a kind of local *hœmastasis*.

Hœmastasis.—For an account of this important substitute for venesection, which has not yet sufficiently attracted the attention of the medical profession, see the lecture on wounds of the thorax, and a quotation from the Lectures of Professor Buchanan, who has largely experimented on the subject in the

Eclectic Institute, and fully presents the subject in his Physiological course.

Slow counter-irritation and revulsion are best effected by means of the *Irritating Plaster.* (See For. No. 1). This preparation should be spread quite thin at first, and on soft leather, as it does not stick as well and will work through when on any kind of cloth. Change this, as a general rule, at least every other day. It is much better to remove it daily, and spread more plaster on the same leather, until the surface to which it is applied begins to discharge. After this it should be changed as often as two or three times a day. A copious purulent discharge can thus be kept up, as long as the case may require, or as the patient can bear it. Whenever it becomes so painful and irritating that the patient's sleep is disturbed, an elm poultice should be substituted. If allowed to *remain* on after this symptom, it will aggravate the local disease for which it is applied. In many cases I wait for this "medicinal exacerbation" as an indication for its removal. When the emollient poultice has relieved all the local irritation, the plaster may be re-applied if you wish to keep up the suppurative drain for a longer time. If not, use some simple healing application. The Black Salve (For. No. 2), is a good article; but I have found a simple salve of beeswax and mutton tallow answer better than any other, as it does not stop the discharge too suddenly. Every time you remove the irritating plaster, poultice or salve, cleanse off all the matter from the sore. This is best done by laying on a dry soft cloth, and pressing it down, so as to absorb and take off all the pus with it. Take care *not to wet* the surface of the sore under any circumstances, for if you do it will be sure to "inflame" in such a way as to prevent all farther healthy suppuration, and be in fact so irritable as to oblige you to heal it up as soon as possible.

This peculiar remedy being a *medicated plaster*, produces other effects besides those of a counter irritant and revellent. Its active properties are absorbed and have an *alterative* effect on the system. Their peculiar odors may be detected in the excretions.

ISSUES

are next in importance to the irritating plaster. They are best made with caustic potash. Take a stick of the pure potassa fusa, rolled in paper to protect the fingers. Wet the end of it, and press gently with it on the point to be acted on, and around it if you wish a larger surface affected. After the cuticle and generally the cutis are thus destroyed, apply an elm poultice during sloughing and suppuration. You may then dress with simple cerate, or if it is desirable to keep up a drain from the point, an excellent plan is to put on a small irritating plaster, as the regular dressing.

In many cases where escharotics are often used, their purpose may be better secured by a proper application of

The Mild Caustic.

The sesqui-carbonate of potash, which we sometimes call the "mild *vegetable caustic*," to distinguish it from mineral caustics, solutions of the nitrate of silver, etc. In some instances I have referred to it simply as "*the* vegetable caustic," in others by its proper chemical name. In any case where simply "caustic applications" are spoken of, this article is to be understood, unless the caustic potash itself, the nitrate of silver, or other articles, are expressly named.

This excellent article is not yet to be found in any old school Pharmacopœia of Europe or America. It was always made till lately from the lye of hickory ashes, by a process which will be described in the Appendix. Any good chemist can prepare it from saleratus or pearl-ash. (See Appendix).

The "mild caustic" then is not so strong as to endanger healthy parts when directly applied to them in substance (even within the eye, for instance); while it is almost invariably effectual in removing fungous or callous growths, and stimulating healthy suppuration or granulation.

Emollients.

The Elm Bark (ulmus fulva), makes the best as well as the most convenient poultice known. It requires only to be wet with cold or warm water, as the case may need, and is then completely impervious to air. The bark should be perfectly soft and free from woody fiber, and ground quite fine. The elm powder is also a convenient addition to other substances to make them adhesive. Next to the elm poultice, one made of *flax-seed* is the best. The seeds are to be boiled until the whole becomes a soft pulp. *The Carrot Poultice* is also a valuable article in many cases. It is best made by grating up the fresh root and pouring boiling water upon it.

Emetics.

These means are not mentioned as peculiar, but for the purpose of giving some directions as to the manner of administering them. When indicated for their effect on the constitution, or any local disease, they should be given slowly. Begin with small portions, repeated at long intervals, only gradually increasing the quantity and diminishing the time. For example, if the fluid form is preferred, begin with a teaspoonful, and repeat in thirty minutes. After the third dose, give two teaspoonsful, then three or four, repeating every fifteen minutes, if the effect is not advancing rapidly enough; or continue to give the four spoonsful so as to keep up a nauseating effect for an hour and a-half. The vehicle should always be some warm, well-sweetened, diaphoretic tea, such as camomile, catnip, ginger, or eupatorium. The emetic always operates more mildly, as well as thoroughly, when given in this manner. It is best, also, if practicable, to have the patient in a perspiration before commencing with the medicine.

Bandages and Splints.

Every surgeon, that is, every medical man in general practice, should be provided with a variety of bandages and splints. He should also keep on hand a good supply of the Gum Shellac Cloth, both thick and thin. (See Appendix for an account of this, and Lecture on Hip Disease, and elsewhere for the *superiority* of this new article to every other).

Common splints should be made of light but tolerably stiff wood, such as the pine, cedar, basswood, poplar, etc. Though he may not be able to keep costly apparatus, yet he can have by him, and ought at all times to have ready, such as he can himself make at his leisure. Some should be fitted for the fore arm, some for the arm, others for the leg or thigh. They should be covered with cotton, rolled on as a bandage, or fitted on with paste, or, what would be better, very soft buckskin or sheepskin, such as apothecaries use for spreading plasters.

The practitioner should keep plenty of bandages rolled ready for use. They may be made of good, smooth, unbleached muslin. The most convenient width, for nearly all cases, is from two to two and a-half inches.

In applying a bandage, or roller, as it is technically called to any part of a limb, it must never be forgotten that, if it has to be tight enough to obstruct the circulation in the least, it should begin from the extremity of the limb, (toes or fingers), and be continued with equal, or, at all events, no additional pressure, all the way up to the affected part. If the object be to promote absorption, or prevent inflammation, the roller had better be continued above the part affected, over the entire limb. It should always lap over the previous turn for two-thirds of its width, and on the calf and other tapering parts it must be turned upon itself at every round, or every other, so as to keep it tight and smooth. In removing a bandage, it looks very unsurgical not to *roll* it off, but to leave it (as I have often seen it left), tangled and twisted, to be afterward rolled up before it can be re-applied. These and similar directions may appear too minute; but a few years' practice will convince any one of the importance of the subject. (See Lectures on Ulcers and Old Sore Legs). In order to be ready and dexterous in this part of his business, the student or young practitioner should frequently exercise himself in applying the roller upon some one who will permit him. The efficacy and diversified power of this simple means are but little appreciated. The philosophy of the bandage is no insignificant part of Surgery.

ANÆSTHESIA.

Surgical operations have, of late, been rendered much less formidable by the discovery that a state of insensibility to pain can be artificially induced for the occasion; and the agents necessary for the purpose now enter into the materia medica under the name of *anæsthetics*. They are valuable acquisitions to the surgeon, as well as the patient. The article first and best known, for its powers in this respect, is nothing but the common Sulphuric *Ether*, purified by water, and taken into the lungs instead of the stomach. This was what Dr. Jackson, of Boston, called by the quack-like name of "letheon," for the purpose of making money, as well as reputation out of another man's discovery. Another artificial product of chemistry, *chloroform*, has been found to have similar properties, and was for awhile substituted for the ether by most medical men as "more pleasant" or more mysterious (the other having been first ventured on extensively by the dentists). It is indeed much more effectual than ether, producing not only insensibility, but occasionally death, in a very short time. If used at all, it should be with the greatest caution, and the patient and friends be forewarned of at least the full amount of danger. The ether, however, can be inhaled with comparative impunity. The best way is to moisten with it a piece of sponge, large enough to cover the mouth and nostrils, so that no air can enter without being saturated with the vapor. I have used it in numerous operations on the eye and other parts. In only one of my patients did it produce complete unconsciousness; the others knew, though they did not *feel* or suffer what was doing with them. It should not be administered soon after eating, as when there is much food in the stomach, sickness and severe vomiting are liable to ensue on recovering from the first effects of ether—a very rare symptom when the stomach is empty. Some patients will feel the effects of the article for a week or ten days. Generally, however, they recover completely in a few hours, describing the sensation as the same that is produced by intoxication from whisky or brandy.

[There are but few surgeons that now employ sulphuric ether alone. Many use it in combination with an equal part of chloroform, while others employ two parts of ether and one of chloroform, deeming these combinations safer than the chloroform alone, and more effective than the other. We have employed the chloroform exclusively, and, from a very extended experience with it, believe it to be the most effective anæsthetic, and perfectly safe if used with proper care. In using it, the chloroform is poured upon a folded napkin, or handkerchief, and held so as to cover the nose, giving room for the air to pass under its lower edge. About one drachm is used at a time, and the napkin re-wet every few minutes. When the patient is coming under its influence there will be relaxation of the muscles of the throat, and a slight gurgling sound. A very good plan is to speak to the patient frequently, and he will answer until consciousness is lost. We watch the breathing, for as long as this is regular there is no danger, and the chloroform should be suspended if it becomes irregular.

If respiration ceases let the patient inhale ammonia, sprinkle water in the face, turn the patient upon the side, and draw the tongue forward, and, finally, adopt the postural method of Marshall Hall for restoring the apparently dead.]

Hæmastasis.

[From Professor Buchanan's Lectures on Physiology.]

"In the treatment of local inflammation, or congestion, it is entirely unnecessary to diminish the absolute quantity of blood. It is supposed that when the quantity of circulating fluid is diminished, a small quantity will be more equal in its distribution, and less liable to local engorgements. But experience does not sustain this view, as it is well known that in many severe cases of pneumonia the local congestion and inflammatory derangement can not be cut short, even by drawing the last drop of blood that will follow the lancet. A smaller quantity of blood may be controlled more easily by mechanical agencies, but is much more liable to derangement of its equilibrium from the slightest causes, as it is well known that in feeble, anæmic conditions, local derangements are much more easily produced than in those which have a full supply of blood.

"It is absurd to attempt to promote the equilibrium of the circulation by reducing the amount of the vital fluid below the normal standard, when at the same time we have a prompt control of the circulation by mechanical means, which do not involve the loss of a single drop. If, for example, an arterial or venous congestion should produce inflammation or pain at any accessible point, how easily we may withdraw the circulating fluid into the neighboring vessels, by the simple agency of *dry cupping*. If you invert a glass jar or wide-mouthed vial over the surface which is to be cupped, set fire to a small portion of cotton in the jar, and apply its mouth closely to the surface of the skin, you will soon have a partial vacuum created in the jar by combustion and the subsequent cooling of heated air. This diminished pressure powerfully attracts and retains the blood of all the adjacent blood-vessels, and thus effectually cuts off the supply from the inflamed or congested part, promptly relieving pain, and, frequently, all inflammatory symptoms.

"It has been proposed to apply this principle on a more extensive scale, by dry-cupping an entire limb at once—immersing the arm or leg and thigh in a huge cupping apparatus, which would render the whole surface of the limb the seat of revulsion. By this means every blood-vessel of the limb would be distended to its utmost capacity, just as you see it under the cupping glass. The amount of blood thus withdrawn from the general circulation would not only promptly break up congestion, and lower the action of the heart, but would be sufficient, if the process were simultaneously applied to the four limbs, to produce almost immediate fainting—thus securing the utmost benefit ever obtained from heroic bloodshed, without the loss of a drop of blood.

"I have invented an apparatus by which this gigantic plan of dry-cupping may be carried out. It consists simply in an elongated cylinder of flexible material, about four inches in diameter for the arms, and seven for the lower limbs. This cylinder is made of any suitable, air-tight cloth, and supported at intervals of an inch or less by circular rings. It should be of twice or thrice the length of the limb to be cupped. The limb being inserted in the cylinder, it is fastened around the shoulder or thigh by an elastic band. The outer extremity is then to be drawn out to its full length, thus producing a partial vacuum by enlarging the cavity.

"A much more efficient, though less simple process, would be to make the cylinder merely of sufficient length to contain the limb, and attach to its extremity a small air pump, consisting simply of a cylinder, piston and valve, arranged like a common water pump, or a self injecting syringe. By this simple apparatus an almost complete vacuum might be obtained. For most purposes, however, any such apparatus will be unnecessary.

The simple *ligature* is all sufficient. If you tie a pocket handkerchief or any suitable cord around the upper arms, or thighs, and tighten it by an inserted stick sufficient to check the venous blood, but admit the passage of the arterial fluid, you will in a short time have the bloodvessels of the limb very greatly distended. Four ligatures applied in this manner to the arms and thighs, will in a few minutes destroy the balance of the circulation, and remove from the trunk from one-third to one-half of its usual supply of blood—an amount of reduction which the most heroic practitioner dare not attempt by the lancet. If your subject be in a debilitated or anæmic condition, he will in a few moments faint, and remain in suspended animation until the ligatures are removed, or loosened, which should be promptly done.

"If he be plethoric, his bloodvessels being already well filled, will not be susceptible of so much additional distension under the ligatures. They will, consequently, not have so great a power over his constitution. Hence, in all cases when the patient is plethoric, and his whole constitution of a firm texture, it will be necessary before you can assume the control of his circulation, that he should be sufficiently depleted by cathartics, diuretics and sudorifics, which remove the watery and excrementitious portions of the blood; and that he should be under the relaxing influence of gentle nauseants, which relax the vascular as well as muscular system. You will also greatly increase the facility and success of *hæmastasis*, by the application of warmth and moisture to the hands and feet, which may be immersed in warm water.

"As a substitute for the lancet I can not well exaggerate the importance of hæmastasis for the purpose of medicine and surgery. All that has ever been accomplished by the lancet (except the destruction of life and the impairment of constitutional stamina), may be accomplished by hæmastasis, in a much more prompt, effectual and unexceptionable manner. It is impossible for the blood largely to accumulate in an inflamed or congested part, when you mechanically forbid it—when you imprison it in the limbs by your ligatures, and prevent it from going to the morbid part.

"Not only does hæmastasis control severe congestion, it is equally potent in cases of hæmorrhage. In uterine Hæmorrhage, for example, which has so often baffled the resources of medicine, a knowledge of hæmastasis gives you the power of retaining the blood necessary to life. It is impossible for much of the blood to flow from the ruptured vessels, when you have mechanically imprisoned it in the limbs. As soon as a ligature has been applied, and the bloodvessels of the limbs are well filled, the patient is nearly safe. You have imprisoned a sufficient stock of blood for all the necessary vital purposes; and it will be impossible for the heart and arteries to expel much of the portion which you have left in the trunk. You have already so lowered the action of the heart and arteries that active hæmorrhage from small vessels is impossible.

"In the practice of surgery, the knowledge of hæmastasis obviates the danger of hæmorrhage from divided arteries. When you have taken possession of one-third of the blood by your ligatures, there can not be a sufficient amount left in the heart and arteries, or sufficient force in their action, to produce any injurious hæmorrhage, before the large vessels could be secured. The contractibility of the small arteries and the coagulability of the blood will often so effectually prevent any hæmorrhage, from such sources, that you will be at a loss to find the smaller vessels that have been divided, and may find it necessary to loosen the ligatures that you may find the divided vessels."

LECTURE I.

INFLAMMATION IN ITS GENERAL ASPECTS.

Surgery and Medicine—Fever and Inflammation—Inflammation not *a* disease, nor "*the* reparative principle"—Etymology—Heat and other vital manifestations—Excess of, vascular or nervous?—Simplistic questions and varied researches—Acceleration or Retardation—Chemical and Microscopical results—Inflammation not indispensable to recovery from local injury—Its stages up to "mortification," and particularly of suppuration.

It has been long customary to begin a course of instruction, or book, upon surgery, with a dissertation on inflammation; and a course on the practice of medicine with the subject of fever.

"Inflammation," says the celebrated surgical philosopher of England, John Hunter, in his great work on the blood, (page 205,) "is the first principle of surgery." In the same sense it may be said that fever is the first principle of medicine proper. The two subjects are indeed of primary importance to both physician and surgeon. The latter may have most to do with local and external diseases, the former with constitutional or internal; but their science can no more be separated than their business. The surgeon, if he does not "practice physic," must know how to treat fever; and the physician, without pretending to anything especially surgical, must understand inflammation.

There is an obvious propriety, then, in blending the studies; and if medical teachers generally had earlier adopted the practice of surgeons, in separating distinctly what was general from what was special, the science and art of medicine would much sooner have reached their present position, and been by this time, advanced to where we can only hope that other generations will bring it. As it is, pathology has only approached to the character of a science in proportion as diseases have been studied surgically, so to speak—have been localized, or, where that was not possible, distinguished from known affections of particular parts or organs.

In theory as in practice, Surgery has always taken precedence of Medicine; the advance has been from the known to the unknown, from what is seen to what is only inferred. Surgery has had the advantage over medicine of its *results* as well as its objects being generally appreciable by the senses. The advance of Surgery before the other departments of the healing art is particularly manifest in the knowledge and treatment of Inflammation.

Neither Inflammation nor Fever are *diseases*, in the same sense as typhus and erysipelas, for instance, these being evidently particular kinds of fever and inflammation. It would be scarcely less absurd to class Fever as *a* disease on the same level with Cholera, Paralysis, or other affections of a non-febrile character; or arrange "Inflammation" with Atrophy, or Degeneration of any particular part of the body. When Nosology was in fashion, as a medical study, the two words in question represented, not species but genera or orders; and together constituted a connected class, including all the most common and important objects of the healing art.

Indeed it has been made a question in regard to each of these subjects, and especially to inflammation, not merely whether it ought to be considered as *a* distinct *disease*, but as a morbid state at all. Each is so often observed accompanying recovery from injuries or disordered conditions, and is so closely connected, if not identical with, some of the most necessary recuperative processes, that the question whether it is a disease at all can not fail to arise at times, to every thinking mind. The tyro in medical philosophy can see the difficulty. Perhaps no explanation that can be given will entirely remove it. The question, I am inclined to think, has never yet been fully answered, that is fairly stated; it is, in some degree, like most other controversies, one of words. When our medical language shall acquire more precision, this and many other questions may be found to answer themselves. The point, however, is not without its present practical bearings and importance; and will be borne in mind in the familiar elucidation of the subjects which I shall endeavor to give in this and the succeeding lecture. We shall have plenty of *drier* and more directly practical points to discuss hereafter.

Among the conditions of life is a certain range of temperature, above or below which it can not be maintained. This range is much wider than might at first be supposed, owing to the wonderful provisions of adaptation which you will be particularly instructed in by your teachers of Physiology. The result is, that the human body has the power of keeping up to about its hundred degrees, in all climates and under all ordinary circumstances. Heat, then, is one of the manifestations as well as conditions of vitality. It is one of the most striking manifestations. It is popularly and poetically expressive of life; its reverse of death. "Ere coldness wraps this mortal clay" is the poet's translation of *dying;* the chemist's version would only be verbally different. It would show that the "fire of life" is not a mere metaphor. "Heat *is* life; cold is death," said a man of strong common sense, *beginning* to *theorize* in medicine. To him the aphorism (however our physiology and chemistry may smile at it) expressed a great *practical* truth—the result of no contemptible experience, however fashionable it may be to confound with ignorance a man's inability to express himself in the current dialect of science.

The words "inflammation" and "fever" are both similarly derived from the most striking phenomenon of the states—the unusual development of heat accompanying them. They mean that the body is "burning up." Modern chemistry would accept the definition, with the addition of "too fast." Liebig has a complete "Theory of Disease," founded on and confirming this simple idea. The slow combination with oxygen throughout the body, as well as in the lungs, is made not only to explain the problem of animal heat, but of the common morbid increase of temperature. The degeneration of the diseased parts, and the subsequent decomposition of the whole, are accounted for on similar principles. I can not pretend here to enter into these interesting subjects, but allude to them to impress on your minds the value of *all* the branches of science to which your attention will be directed in the course of your studies.

Not only has it been speculatively doubted whether inflammation is not an altogether necessary and beneficial operation, or at least "effort" on the part of nature of a beneficial tendency; but it often becomes practically requisite to consider it in some such light. We speak of it as a desirable condition, though more often as an evil to be removed or averted. In Carlisle's Notes of Sir Astley Cooper's Lectures we are taught, without qualification, that "Inflammation *is* the process by which local injuries are repaired, and may be considered as *the* restorative principle." Physiological authors often speak in a similar manner, though at other times the state in question is discriminated as "abnormal." It is *then* contrasted with *a* reparative process, one of "growth analogous to the natural one," attended with little or no irritation, or confusion and waste of material, and more complete and permanent in its result. "It is consequently," says one of the most esteemed of these writers, the very mode of repair "which the surgeon should aim to produce; and the means of accomplishing this aim consists *in keeping down the inflammatory process.*" In the other diseased or *more* "abnormal" mode, a new and distinct kind of tissue is formed, a merely provisional growth *not* analogous to the natural and permanent one. And the result of this "granulation structure," as it is called, "is not so perfect as that of the simple or non-inflammatory process."

It is, of course, in some sense true, that the "efforts of nature" must be all directed to good ends. We, see, however, that no doubt with the best intentions, "Nature" errs from her presumed end, and works evil instead of good. This may not be a very respectful way of speaking, but it is inevitable when our individual ends and aims are attributed to "Nature" as a whole. In a wider sense, Nature can do no wrong; but this, like the corresponding maxim, "Kings or sovereign bodies can do no wrong" is to common sense untrue, absurd, and practically mischievous. As the political doctrine alluded to, the divine right of kings, led to the servile corollary of "passive obedience," so the divine *infallibility* of nature points consistently to non-interference, and letting nature take her course in all cases. Strange as it may appear, this practical *reductio ad absurdum* has not daunted some reasoners. They have accepted it, and founded on it a system of practice, or no-practice. In fact the views in question can not be maintained without arriving at the conclusion of such "Medical Reformers" as Dr. Jennings, of Oberlin, who really advocate a simple "faith in nature," discarding all our presumptuous attempts to interfere with her, since she always aims at the best possible results under the existing circumstances.

Besides the practical, common-sense objection, to considering inflammation as a sanatory process, or the reparative principle, recent researches give us additional reason for doubting it even in its most abstract and general sense. Microscopic observation shows that in the the mode of reparation "analagous to the natural growth," in the union of wounds "by the first intention," for instance, under the most favorable circumstances, there is no evidence of what we call inflammation, or any of the changes always accompanying that state. Nature gets through her extra work of repair, with the same ease, precision, and uniformity, as her regular business of growth, and preservation. And in those lower orders of animals, whose reparative powers are greater than ours, extending to the reproduction, for instance, of a lost limb, the process, as we are informed, always takes place without any appearance of inflammation.

The common, convenient distinction, between "healthy" and "unhealthy inflammation," would seem to imply that the process may, or may *not* be one of *disease.* The expressions, however, may be better understood as characterizing those modifications whose tendencies are toward health, or toward still *greater* disorder: "healthy inflammation" thus means *healthward,* and self-limiting, such as takes place, under favorable circumstances, in an *otherwise* healthy constitution. John Hunter, who was one of the first investigators of this subject in a philosophical spirit, and makes great use of this distinction, speaks also in perfect consistency of "too much health," or "health above par." These expressions would be regarded by most as involving absurdity; and perhaps "healthy inflammation," though it is hardly possible to avoid its use, may come to be considered a contradiction of terms.

Increase of other vital properties besides that of heat, is so obvious in inflammation, that the fact has for a long time been considered a sufficient definition and explanation. The state has been identified with over or undue excitement. The natural functions of any part stimulated too much, or too long, may, indeed,run into inflammation; but the latter state is clearly a new one, and will continue for a longer or shorter time, after the stimulus causing it has been withdrawn. Although a stimulus produces the diseased state in question, we may reasonably suppose that it never does so except by exhausting the natural and healthful excitability, and substituting morbid irritability, thus depressing, instead of exalting the vital powers of the part. After much controversy on this subject, this seems now to be the general opinion, or tendency of opinion.

Nevertheless, it once seemed to be the only question—to which agencies of the system to refer this increased activity. The bloodvessels appeared plainly most concerned in the business; but when the implication of the nerves became known, the priority of their action was generally recognized.

The ancient definition of its state was wholly independent of any idea as to its nature. The "four signs" it distinguished may still be remembered with advantage. When a part feels "hot and painful," or looks "red and swollen," it is very apt to be in a state of inflammation. These evidences, however, have to confirm or correct each other. One or two may concur, without proving the point; and serious inflammation *may* exist without either being very manifest, and often does run through its course without manifesting all these symptoms. "Redness," of course, can only be observed on the surface of the body, or at the extremities of mucous openings. The sensation of "throbbing" is considered by some as more generally characteristic of the state than "pain." Perhaps *soreness*, (or tenderness to pressure and other irritants,) would more frequently hold than "pain," if by that be meant spontaneous sense of suffering, without any external cause.

A change of action tending to, if not, also, resulting from a change of structure, may be regarded essential to our modern idea of inflammation. Placing this characteristic tendency first, as more important than the sensible appearances, Druitt suggests the following definition as an amendment of one given in a French Medical Dictionary: "A state in which there is a tendency to morbid secretion and change of structure, accompanied by increased vascularity and sensibility."

According to this, the bloodvessels and nerves must both be concerned in the result. Where there are no nerves of sensation, the organic nerves commonly become such, when the part is inflamed. In a paralyzed part, however, inflammation appears to go through its course independently of "increased sensibility." This, though an exceptional case, might be supposed to prove that the sensitive nervous system is not essentially concerned in the process. "Increased sensibility" to an intolerable degree, as in neuralgia, may exist, without necessarily being or becoming inflammation.

Irritation is often spoken of, especially by the French "physiological" or Brunonian school of theorists, as the first stage, or rather the invariable antecedent, and of course "cause" of inflammation. There is, however, no more necessity for looking to the nerves than bloodvessels, as the primary source of the evil. *Known* causes or occasions of inflammation may act directly on the nervous or vascular system, or even on solid structures of the body, independenlty of either. Whatever destroys or depresses vitality to a certain extent, or what only *seems* to excite its ordinary manifestation beyond the regular limit, will equally induce the state in question.

As far, then, as this single question between the nervous and vascular systems is concerned, it is evident that they are both involved in the ordinary phenomena of inflammation, as the usual signs, "redness and pain," plainly indicate. It is clear, moreover, that they act and react on each other, and no question of necessary priority between them can be maintained, unless by affirming that every change in the action of a bloodvessel implies a prior, but almost a synchronous change in its inervation, from the ganglionic system of nerves. An active determination of blood to the brain, (for instance,) may be for a while quite distinct from cerebritis, but is very apt to lead to some form of it. A cupping glass, producing all the external "signs" of inflammation, would actually *cause* that state, if not removed. Over-stimulation of a part by blood, even in its healthy state and flow, *is* itself *irritation*, the very state of the nerves in question; and stagnant arterial blood soon proves itself a source or occasion of a similar state. On the other hand, over-stimulation from any cause, however unconnected, originally, with the circulation, has in general a tendency to bring about a preternatural determination of blood, according to the old empirical maxim, *ubi irritatio, ibi affluxus.*

The functions of the nerves and bloodvessels can as little be separated, or studied apart, without implying each other, as their course and structure can be distinctly investigated in anatomy, and demonstrations made of the one without touching or seeing the other.

Inquiring more closely into "the nature" of inflammation, some might, perhaps, be tempted to adopt the favorite philosophical "conclusion in which nothing is concluded," viz., that "we know nothing at all about it."

The obvious increase of some of the vital manifestations in an inflamed part, seems for a long time to have so impressed observers' minds, that they made little or no question that this first view was a full, correct, and sufficient one. Its apparent accordance, in the majority of cases, with successful practice, no doubt greatly strengthened this first impression. Heat, for instance, is an ordinary manifestation of vitality; in inflammation the calorific function is evidently too active; we reduce it, or remove its self-sustaining results, and the case improves. What plainer, therefore, than that heat* is one of the supporting influences of inflammation, as of life, and cold a remedy. The same may be said of other vital stimuli—air, food, motion, etc. Hence, the once fashionable, and still too prevalent, confidence in "starvation;" and at one period, not many generations back in the dark ages, patients, with certain fevers or inflammations, were absolutely refused *fresh air!* As to the great *internal* stimulus, the living fluid, or fluid life itself, it is unnecessary to point out to *you*, gentlemen, who have witnessed the abuse of blood-letting, and come here to learn something better—how destructive has been the consequence of a partial and superficial view of inflammation, as consisting merely in too much blood, or too much activity of the circulatory functions. This simple view has evidently been influential in the popular mind, as well as that of the mass of the profession. If inflammation *were* solely vascular excitement and excess of blood, there would be some excuse for invariably, and as a matter of course, removing the cause or means of the mischief. It is beginning, however, to be acknowledged by all, that venesection is, by no means, a panacea, even for pure inflammation. The lancet is found at last to be no more the best remedy for physical evils, than the sword for moral. Blood-shed is looked upon with somewhat of the same suspicion, when resorted to for the purpose of restoring health, as for "conquering a peace."

Speculative men, even when they did not question the prevalent opinion, had many hypotheses about the *proxima causa* and *causa efficiens*. Many of these guesses were, perhaps, not quite so unworthy of consideration as they have since been considered. Some have been ridiculed, since solidism became the prevalent fashion of thought, as belonging to the humoral pathology, and others as much despised by our exclusive vitalists, as too mechanical. At one time inflammation and all diseases were explained by the help of *strictum* and *laxum;* or relaxation on the one side, and tone or tension on the other. *Spasm* of the extreme vessels once played an important part in these imaginary explanations. When it was necessary to account for obstruction as well as acceleration of the circulation, and "stricture" did not seem sufficient, the less mechanical and more chemical-humoralistic speculation invented a "spissitude," or thickening of the blood. This was the doctrine of the celebrated Boerhaave, and led to a reliance on "attenuants."

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* So influential was this one consideration, that it has in connection with an exploded chemical theory of heat, given name to the routine of practical measures: "*anti-phlogistic*" still means "anti-inflammatory."

Our more experimental, or carefully inductive mode of philosophizing, is no doubt much safer than such hypothetical theorizing, yet it is in vain to protest against hypothesis and theory. All men theorize to the extent of their leisure and ability. The only question is between good theorizing and bad, reasoning with facts or without, or with few or many. It is speculation that stimulates observation and directs experiment. Hypothesis anticipates experience, and is only injurious when mistaken for it. Ideas are necessary to animate mere matter of fact knowledge. Thought is the soul of Fact.

Whether Inflammation really consists in an acceleration, rather than in a *retardation* of the local circulation, has been much discussed by more recent investigators; and the microscope as well as experiment has been brought to the aid of observation. But with all these advantages, this question was not so easily settled as might have been supposed. Many recorded experiments seem to contradict each other. As it can not be supposed that inflammation excited in one frog's foot is different from that in another's, or from inflammation in any animal body from any cause, it becomes necessary to discriminate as to the *period* of the process when the observation was made, and also the particular *part of* the supposed inflamed part, more specially noticed. With attention to these points the different statements of facts might not appear to contradict each other. The result would seem to be that, according to the means used to excite inflammation, it may begin either in apparent acceleration or retardation of the local circulation;

either, however, soon inducing the other to a greater or less extent. When obstruction is the first state, it becomes a cause of excitement, which again may change, and a future observation find only a feebler circulation. If everything go on most favorably, there is increased action in the absorbents, and "resolution" the result. If the diseased state continue long enough, there may even be impeded or entirely suppressed circulation at one point, and greatly increased activity or force of the vessels in another.

Restricting the inquiry to the purely physiological question, as first put, the answer must no doubt be that of Professor Burns, of Glasgow, in his work on the "Principles of Surgery"—"That neither debility nor increased action sufficiently account for inflammation." One satisfactory test of the one-sidedness of such views is suggested by this author—that of availability in practice. Could the morbid state in question be really accounted for on either hypothesis, or any other "simple idea which fancy might fix upon," such state, so easily understood, could be as easily treated. All we should have to do to cure it would be to apply the "means necessary to induce an opposite condition." If the question could be settled or arranged as the old kindred one in nosology between diseases of increased or decreased excitability, the surgeon might "defy nature to set up inflammation," with means almost as simple as the Brunonian physician—armed to encounter all diseases, with the lancet in one hand and the brandy bottle in the other. Unfortunately, the war with death can not be carried on with such weapons. The watchwords of sthenic and asthenic have been of little avail in the day of battle; nor have pathologists, since they ceased to be nosologists, or mere classifiers of the names of diseases, found them of much use as mere descriptive words. So with the question under consideration, which, as once regarded, was little else than the old "sthenia or asthenia" in its local application.

It is by no means necessary, however, on account of the unsatisfactory nature of this limited question, to conclude with the author above quoted, that of "the peculiar nature of the action (Inflammation) we know but little, and I fear have in the present state of science no prospect of knowing more."

This tone of despondency in regard to truth is anything but philosophical. The history of science contains too many brilliant triumphs of "impossibilities" and "improbabilities," for any ill-omened predictions to have much longer any influence. Fortunately, a different spirit has animated, and always will animate some minds. On the subject in question much light has been thrown from different, and in some instances, unexpected quarters. There is now a very general *tendency*, at least, to the opinion that not only we *do* know "a little" about inflammation, but from the present state and prospects of science may soon expect to know much more.

When we find one route of research blocked up, it is only a reason for pursuing another, with the advantage of already knowing at least that the one abandoned was not the right or best. When Nature is cross-examined in our experiments, she often refuses to depose merely "yes or no;" and her answers are not the least significant and worthy of record when they seem to evade the question. They furnish hints for other questions, or the same in other forms, that she wlll be more disposed to answer directly. In the investigation as to the nature of inflammation, the advocates of both sides of "the question" have found it necessary to vary and modify their inquiry, and make many limitations and discriminations, not before thought of.

The subject has not been allowed to remain as a merely curious and limited physiological or pathological question. Comparative Physiology and even Pathology have been brought to bear upon it. The inquiry has not been restricted to what we can see even under the microscope. Chemistry has carried us as much beyond Optics, as the latter beyond the ken of unassisted vision. It is now known that the old humoralists were not wrong in the directions their inquiries took, so much as in the conclusion in which they stopped and *rested*. The changes or *actions* going on in the blood itself, and other fluids, are at least as important as the resulting changes of structure or action in the solids. The contents of the vessels in inflammation, and the discharges from them. require to be studied, no less than their caliber and contraction.

In fully developed inflammation of any extent, the whole organism sympathizes with the affected part, not only sensibly or physiologically, but, so to speak, chemically: there is not only general uneasiness or irritation, and it may be symptomatic fever, but all the absorbent and secreting functions are modified, and consequently the constituents of the blood changed, both by what it receives and what it ceases to give off.

The change called the buffy coat has been long since empirically known, and it may be empirically acted on. The same *appearance* may be produced by circumstances so trifling as the shape of the vessel in which the blood is poured. A deeper stratum of the blood, or a greater slowness of coagulation, gives opportunity for the red globules to subside and leave the lighter colored film at the surface to form this buffy coat. Even the size of the orifice through which the blood runs may have an influence on the buffy appearance; and it has been well ascertained that the buffy coat may frequently be absent in cases of severe inflammation. Yet there are physicians who still bleed to get this evidence of "bad blood," and bleed again because they find it!—this buffy coat, so much talked about when bleeding was more in fashion, appears really to be the result, not perhaps of inflammatory blood, but of a modification of the blood accompanying inflammation. There is found, on actual analysis, to be nearly as much as one per cent. more fibrin in the circulating fluid in some cases of inflammation than in health, and less than the average proportion in certain typhoid or non-inflammatory diseases. Fibrin appears to be the material of nutrition and of the *reparative process.* Its corpuscles indeed exhibit the transition of organizable matter into living atoms, or germs ready to take their place in any part of the organism. The corpuscles differ from the proper blood globules, in being white or colorless.

According to the chemists "there is a direct connection between the quantity of oxygen introduced through the lungs and the amount of fibrin in the blood." The coagulation of blood, when out of the body, or precipitation of fibrin, seems analogous to its solidification or assimilation when *forming part* of the living organism: just as the brightening of venous into arterial blood, may be effected by the presence of oxygen anywhere else as well as in the lungs. The red globules or blood discs, according to chemists, are the parts concerned in oxygenation, and have nothing to do with nutrition. The different degrees of oxydation of their iron (an element not found in the solid structure of any part), constitute the principal difference of venous and arterial blood, and principal source of animal temperature. Hence, perhaps, a reason for thinking redness and increased heat no necessary concomitants of the merely reparative process; and this view accords with the aim and result of treatment. The practical object always is to keep down the temperature of the inflamed part. Observation confirms this opinion: when divided parts unite most favorably "by the first intention," or when a breach of continuity is filled up with "healthy granulations," no preternatural heat is noticed.

At the *beginning* of the true inflammatory *process*, and afterward in the *middle* of the inflamed part, as a nucleus of disorder, there is a greater or less cessation of the ordinary vital functions. This much seems to be generally if not universally acknowledged. "The extraordinary tendency to the production of fibrin," previously noticed as the most important character of inflammation, is said by Carpenter to be "*always* conjoined with a *depressed vitality* of the tissues of some part of the body, which indisposes them to the performance of their regular nutritive operations; and this part may undergo a variety of changes, according to the degree in which it is affected." This "depressed vitality" or *disordered nutrition* is shown to involve a languor in the movement of the blood, with which the capillaries are distended. There is nevertheless a determination of blood toward the part, with a special attraction to it of the "white corpuscles," that is, of the fibrin, which is necessarily in excess from the check to the nutritive process throughout the system. The "effort of nature" in inflammation, or the final cause of the process with which it is connected, is evidently good. Some degree of or tendency toward this state is indispensable to the *reparation* of injuries, and still more plainly though less directly to *preservation*, by limiting the progress of disorganization.

Slight irritation in a part may pass off without much affecting its vascular functions; and engorgement of vessels, as after cupping, may be gradually removed, and the *eddy* carried on again into the general current of the circulation. In these cases, we do not say there has been any inflammation.

Even where the cause has operated long enough to develop all the recognized "signs" or symptoms of disease, the re-action of the "depressed vitality," or that of the surrounding parts, proves sufficient to overcome all obstruction. The disorder of the part "resolves itself" into the normal state; and this *reso-*

lution of inflammation, only differs perhaps from the disappearance of irritation or stagnation last mentioned, in having been preceded by more or less *transudation*, for the relief of the distended vessels. The fine gelatinous fluid long known as "coagulable lymph" is thrown out, first distending the parts, and then ministering to its repair. This "coagulable or organizable" fluid, may be familiarly defined as "white blood," or blood *minus* its red globules, with, at this time, an additional amount of colorless ones. These when naturally coagulated, or, so to speak, vitally preciptated and crystalized, become integral parts of the living *solid* body. According to common observation and language, the effused lymph (or fibrin) "becomes organized." According to the recent microscopic, or what may be called from analogy to chemistry, *atomic* anatomy, the colorless corpuscle or molecule of fibrin, becomes a "primordial cell" or cytoblast. "Corpuscles" seems a correct name for these organic atoms, for they appear to have their own independent vitality, even anterior to being organized, or *assimilated* to already formed structures. The serous part of the blood or lymph, is the first nutriment of these cell-germs, and hence called the "cytoblastema."

"The shooting out" of new *vessels*, or prolongations of branches, into the newly deposited fibrinous matter, has long been investigated as an interesting process. We are now informed by microscopists that the cells arrange themselves in rows, the cavities of which connect into canals, by obliteration of the transverse surfaces of the cells themselves. Thus all animal, as well as vegetable structures, are originally cellular. In the proper fibrous formations (including muscles) the cells themselves undergo a change of form, become fusiform instead of spherical; the single cells become fibers or fibrillæ. Drawings of this transformation are shown expressly from "plastic exudations."

The red blood, or the proper coloring portion of it, seems to have nothing to do with the nutritive, nor consequently with the reparative process. The globules or discs containing iron and carbon, play a part only in the respiratory or calorific function, with its necessary consequence of transformation of tissues throughout the system. As far then as increased "heat and redness" are developed in inflammation, they may be regarded as injurious. The development of heat, so far from being proof of stronger vitality, may be the means of *destroying* life, and continue *after death*, as recent researches have shown. It is altogether too common and explicable a result of chemical change, to be regarded as otherwise than incidentally connected with life.

When there is besides or instead of a mere transudation of serum as lymph, holding the fibrin in solution, an effusion of complete blood, the process of reparation and restoration will be more complex and difficult. This is the case, not only in injuries which open or divide the bloodvessels, but, whenever the obstruction and increased action in the vessels are so great as to cause their rupture. It is as much from this extra-vasation or ecchymosis as from structural injury to the solids, that "contused wounds" are so troublesome. In "lacerated wounds" the careful surgeon always removes clots of blood, and sponges out all he can that is yet fluid, as if still living, it must, in that situation, soon die and become a source of irritation.

When the direct injury causing inflammation has been greater, when the "depression of vitality" amounted more nearly to extinction, or when the inflammatory process has proceeded unfavorably, so as to result in at least the death of the fluids, there must be SUPPURATION. Pus is dead blood, or fibrin. The globules still found in it are larger and apparently partially decomposed, certainly so far changed that they can take no farther part in the chemistry of life, or be of any possible use, except in some situations to act as a temporary cuticle and protect the surface of a wound from the air. Suppuration is spoken of as a "secretion" when it takes place from a mucous surface. It is usually accompanied with sensible relief to the distended vessels and neighboring parts, which then, if not before, throw out good coagulable lymph, by which the tissues of those parts are consolidated, so as to prevent the spreading of the pus. When from "too low a grade of inflammation," constitutional weakness, peculiarity of structure in the part, or any cause, this isolation of the suppurating part and product does not take place, we have the very serious result of "diffused inflammation." In this case the infiltrated matter not only acts as an irritant, which has long since been well enough understood, but the decomposition going on in the pus appears to be of the self-continuing or self-communicating kind, recently investigated with so much interest by the chemists. The deleterious agency of pus is rather active than passive, of a *ferment* * rather than that of a foreign or "effete" substance. Hence, under the most favorable circumstances, abscesses, though limited by the *effused* and organizing fibrin, become *ulcers*, the pus "eating" its way out.

[Late investigations have determined conclusively that pus is formed from the elements of new tissue, which are carried to the part for the purposes of growth and repair, and the vitality of the part being impaired oozes out and takes the low formation of pus. There seems to be but a slight difference between mucus and pus, the first having the best organization.]

If the original injury or the subsequent *inflammation* itself be so great as to cause the disorganization of a sensible amount of the *solid* structures, we have what is called *sloughing*. The difference between this result and that of mere suppuration being that the solid matter is not so easily converted into pus as the devitalized fluids. In this case the local "depression of vitality" amounts to a *sup-pression* or destruction. Hence positive inflammation may seem more necessary than in simple division or excision of a part. The question remains, however, whether fibrin might not be effused for both reparation and protection, as in the case of mere suppuration, without sensible inflammation—that is, without its phenomena. In actual *Mortification*—which in the view here taken only differs in the *extent*, not the intensity of the evil, from the preceding degrees of injury—there is death throughout a considerable part, both of the solids and fluids. Here the *sloughing* is on a large scale, and inflammation with suppuration, etc., can only take place in the connected parts, where the depression has not amounted to a suppression of vitality. This is one of the cases where the apparently beneficial effect of the inflammatory process is the most striking. Gangrene, or the *dying* process, like the simple suppuration, has a tendency to spread; and is limited by the effusion of fibrin, which also prevents hæmorrhage from the partially destroyed vessels, and sets up the well marked "line

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*Notwithstanding the ridicule attached by modern purists to the use of such words, which they consider antiquated, we prefer to retain this word *ferment*, which is sanctioned by chemical science. See Cooper's Surgical Dictionary, Theory of Suppuration, Vol. II, page 313—where, because the old ideas of the fermentation of *solids* into pus are shown not to be the whole truth of the case, the use of such terms as "acrid or corroding pus" is condemned unqualifiedly as unworthy of educated medical men.

of demarcation" between life and death—on the one side of which all vital action has ceased, while on the other it is manifested to the inflammatory degree.

The tendency of inflammation to diffuse itself is particularly manifest in *ulceration*, which is hence sometimes called "*destructive* inflammation." In this case, a peculiar layer of cells have been noticed, "which appear to possess the power of drawing into themselves the materials of the solid tissues on which they lie, and thus causing their destruction; and this destructive action may take place to an unlimited degree, if no measures be taken to check it." The author quoted goes on to explain the efficacy of the "most successful mode of treatment in these cases," that of caustics, by the fact of their destroying these peculiar cells and the adjacent matter partially affected by them; and thus to draw another argument for the necessity for inflammation. He speaks of the inflammatory action, beneath the surface killed by the caustic, as the only possible mode by which "fibrin can be effused and preparation made for filling up the breach of substance." The treatment he appeals to, is undoubtedly the best in many cases, to which it is *not* commonly applied. The burn is more manageable than a phagadenic ulcer. The sloughing process, limited by the contiguous inflammatory effusion, is less destructive than the parasitic cells of which he speaks. But, after all, does this amount to more than saying that one kind of inflammation is preferable to another, as the lesser of two evils? That the excitement of inflammatory effusion is, in all cases, the only way of arresting the destructive progress of such ulceration, is contrary to the experience of all who have used appropriate stimulants or *milder caustics*, such as our preparation of potash (the sesquicarbonate, an intermediate between the common pearl-ash and saleratus). This article is often better than a substitute for escharotics, destroying morbid growth and arresting morbid action, without exciting inflammation or acting in any way *unfavorably* upon sound parts. In many cases it very evidently allays both irritability *and inflammation*.

According to the view here taken, Inflammation—though perhaps to be regarded as originating in the healthful function of reparation, is still an excess of that necessary action, and therefore a disease—a condition which, if carried to a certain degree, defeats the very object for which it is said to be constituted. If continued too long, it will more or less transform, or wholly destroy the part; and if extended too far, must certainly be fatal. That this morbid and dangerous state appears sometimes to be a relative advantage, like every other general provision of nature, is no reason for calling physical evil, good. If nature ever cures, or partially saves by means of inflammation, when she could not by any other means, this is only saying that nature, like other intelligent agents, sacrifices a lesser to a greater object, and like *other* practitioners of the healing art, sometimes inflicts transient pain and inconvenience for the sake of permanent benefit.

The slight exaltation of vital action that seems necessary to the *recuperative process*, is but that process in operation, the performance of over-work and the making up of lost time, in the more active resumption of functions that have been impeded. When the amount of the injury, or the want of steady health preservative power in the constitution, is such that this resumption of increased business on the part of nature can not be got through without evident hurry and alarm, and more or less confusion and damage done to the agents and material concerned, there is of course *disorder*, *disease* and danger—what we call from one of its obvious symptoms and dangers, the "burning state," or inflammation. If the danger is obviated, the obstructions removed, and the orderly performance of the functions of the part resumed, here is a resolution of the inflammation. In this case the depression of vitality was but temporary as well as local; the *part* was in a state of "suspended animation," occasioning the subsequent and surrounding "reaction" of excitement. When the original mechanical injury, or subsequent *chemical*, or chemico-vital one of inflammation, excited in the *imperfect* effort to repair the former, has gone to the extent of so altering any of the living "atoms" of the organism, that *their* vitality must cease or become latent, they are *discharged* from further service, and thrown out as "dead matter." The "secretion" of pus, which has been the professional doctrine, since the rejection of early and superficial chemical views of putrefaction, is more properly an *excretion*. None will contend that it is the elaboration of anything *positively* useful, and therefore the main object of the process must be to get rid of something which is the reverse. Suppuration may be regarded as a slower and modified process of decomposition, if we must not say "fermentation," modified, "controlled," if you please, for wise ends, by the "vital *principle*," or more strictly and chemically speaking, the *conditions* of vitality. The absolute distinction between the solids and fluids, which appears to have prepossessed the minds of medical reasoners for some generation or two past, is quite unchemical, not to say unphilosophical, especially after they had been obliged, with Hunter, and others before him, to attribute vitality to the blood. Blood is essentially fluid flesh; muscle is solid blood or fibrin. [See Liebig, Mulder, etc.]

Suppuration, if thus a mode of local or partial dissolution, may still be the most favorable mode. It often prevents "mortification," or the quicker and more complete death of a larger amount of the living mass, already solidified. In suppuration, nature expends, if possible, only her superfluous resources, to save what is more identified with the permanence of organism, just as nations, to preserve *their* vitality or independence, send against an invading foe the portion of society that can best be spared, to preserve the rest from destruction. Here, too, the analogy with inflammation holds strictly. The preservative process or means often turns out destructive to friends, more than to foes. The arming of society is often found an "inflammatory" and disorganizing business—a *fatal* necessity.

LECTURE II.

INFLAMMATION CONTINUED UNDER ITS MOST PRACTICABLE ASPECTS.

"The four Signs"—Constitutional Symptoms—Changes of Function and Structure—Divisions—Common, Specific, "Healthy" etc., Acute and Chronic—"Terminations," Modifications from circumstances and in different tissues—Causes—Effects—Adhesion, Suppuration, Ulceration, Cicatrization, etc.

Going more technically and practically into the subject of Inflammation, I will revert again to the so-called *signs*, pain, swelling, increased heat and redness.

The Pain can not be wholly attributed to distension and "stretching" of the nerves by the engorged bloodvessels, for it is not proportionate to the vascular distension, and may precede, being often the first symptom. The tenderness or soreness, which is often a diagnostic symptom between inflammatory and merely nervous affections, shows that the *sensibility* of the nerves is itself altered or heightened. This is further manifest from the *sensation* of heat, which is out of all proportion to the actual elevation of temperature. Bones, moreover, and other internal parts not naturally sensitive, become intensely so when inflamed.

The pain is always *lessened* by discharges from the engorged vessels; and while it lasts more severe in structures that are hard and unyielding. Adhesions also lessen pain, or prevent it altogether. It is generally less in chronic than acute cases, and in what are called specific inflammations, as scrofulas, than in the ordinary forms.

The pain may exist in or be referred to parts *distant* from the seat of the inflammation. In the hip disease the first complaint of the patient is often "pain in the *knee*."

The *character* of the pain, as well as the amount, differs in the different structures and tissues. Throbbing is the characteristic of proper phlegmon or circumscribed inflammation in the cellular structure; and a dull, heavy sensation that of the substance of most of the internal organs. When the external covering of the body is affected, the pain is generally described as "stinging or smarting;" when the internal, or mucous surface, as a sensation of "burning and soreness."

The SWELLING may be, in the beginning, from mere increased flow of blood to the part, though if the "increased vascularity" meant activity of the veins as well as arteries, the more rapid current would not account for the rise of the stream, much less the *overflow*, without an obstruction at some point. There is always, perhaps, more or less transudation, often effusion of the blood entire. When the "coagulable lymph" is thrown out, and its fibrin deposited, the thin serum permeates the neighboring cellular tissue. These are the chief causes of proper inflammatory tumefaction, which may be surprisingly great and rapid. It is to be distinguished, however, from the sudden swelling of a part from internal hæmorrhage, as well as the gradual development of a tumor. If the vessels are not sufficiently relieved, fibrin of an inferior quality is thrown out, often mixed with blood from the rupture of the vessels. In a more advanced case, the accumulation of pus may be the principle cause of the swelling.

The swelling, in as far as it results from effusion, is a relief to the distended vessels, and appears to enable them to resume or continue their proper functions. As observed before, the less opportunity for swelling, the greater the pain. The swelling or effusion may, however, be the very cause of suffering; as beneath the periosteum, or between the cartilages. It may even become a source of danger, by pressure on vital parts. Next to loose, cellular textures, glands are the parts apt to swell most largely.

Increased Heat, though so prominent a sympton, has been much questioned and debated. After the thermometer was resorted to, it was matter of surprise that so little if any change of temperature was discoverable. Hunter *sometimes* failed, after exciting artificial inflammation in animals, to ascertain any definite increase of heat. It has been generally allowed, however, that in the lower extremities, and other parts distant from the center of circulation, the inflammatory state raised the temperature a few degrees—up to that of the heart or lungs; and this slight change was attributed wholly to the increased quantity, and more rapid flow of the blood. "Heat," then, as a symptom, is referred rather to the morbid susceptibility of the nerves, than to an abnormal physical or chemical condition of the parts. A difference, however, of seven or eight degrees, which is allowed to be not unfrequent, is certainly considerable. That the part is cut off, as it were, from the general level of temperature, and has lost any power of regulating its own, is sufficiently important. The relief from abstracting heat, and *after* effusion and suppuration, the appearance of the pus globules, and other more manifest results of molecular action, all seem to favor the idea that "inflammation," after all, may be essentially nothing else than what the word imports, a "burning up" of the part—in the chemical dialect, a too rapid combination with oxygen. In the theory of Liebig, before alluded to, it is a too rapid "transformation of the tissues." not only destructive of itself, but developing *other* destructive and superfluous "force," as well as that of heat. The fact that not only does an inflamed part rise six or seven degrees, but that some parts of the human body rise as many degrees more after life has ceased (or up to 113 degrees*), clearly shows that chemical considerations can not be dispensed with, in the explanation of morbid phenomena.

The REDNESS is not only owing to more blood being in the part, but to that blood itself being richer in the coloring matter, or red corpuscles, in proportion as the serum with the fibrin or white corpuscles has been thrown out. There may be also transudation or effusion of the blood, red particles and all. Redness of surface proves the distension of the vessels, not as was once supposed by the red globules taking the place of the supposed smaller lymph-corpuscles, but by their being visible only in mass and not in "single file." As the inflammation advances new vessels may also be formed, thus adding to the *degree* of redness. This varies with the structure of the part, the kind of inflammation, its amount, stage, etc. It is greater, for instance, on mucous membranes than on the skin. There is said to be "uniform redness" in Erysipelas, "capilliform" when only *some* of the capillaries are rendered visible, as in conjunctivitis. There may be only red *points* or larger *spots* called maculæ—the latter from sanguineous effusion. The effusion in most specific or asthenic inflammations becomes of a dusky or even coppery hue. In chronic cases generally the "redness" is but that of venous blood. The more acute and sthenic the action, the more it has of the bright scarlet hue, or that of the freshly oxygenated blood.

The CONSTITUTIONAL SYMPTOMS of inflammation ought not to be overlooked. When the disease is at all severe, or in an important part, the whole system is affected with what is hence called "sympathetic or symptomatic fever." This is usually of the active grade—distinguished as "inflammatory" even when not dependent on any known disease of a particular part. Its development is usually preceded by chilliness and weakness, with a diminution of the secretions. It may become a source of greater danger than the local affection itself, and greatly retard the favorable progress of the latter. The nervous system may sympathize, without the circulation reacting to the febrile extent, constituting general irritability; or be depressed, with a feeble excitement of the heart, and derangement of the secretions generally, thus changing from the inflammatory to the typhoid character. Lastly, from extensive ulceration or absorption of pus, *hectic* fever may set in, with exhausting efforts at reaction.

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*An important fact long overlooked, and but very recently settled, by the experiments of Dr. Dowler, of New Orleans, and Davy, and others, in England.

The ALTERATION of function and structure, in the part affected, is a more important consideration than mere external symptoms. The "increased sensibility," like the "increased vascularity," may be but temporary as well as partial, even in respect of the whole part seemingly affected. It is *around* the injured part that inflammation most displays itself. At the central point there is probably *less* irritability as well as less activity of the vessels. The change of structure, *consequent* on the diseased action, may again reduce both the nervous and vascular system below their average of functional power. The secretion proper to the part is always modified or checked at the commencement of inflammation, but subsequently it is often greatly increased and mingled with the products of diseased action. *Structural* change becomes chiefly manifest in chronic inflammation, the acute ending in complete destruction or more or less *incomplete* restoration. Increase of weight is often a marked sympton, or sensation of the patient, as when a limb is the part affected. Most parts, however, are softer in the acute form or stage. Hardness is the characteristic of chronic inflammation, and may consist with increase or diminution of bulk and density.

After death redness and swelling may disappear, but often remain as *prima facie* evidence of recent inflammation. It requires, however, to be corroborated by the presence of pus or lymph, as well as serum, and *softening* of the part. After mere congestion, the larger *veins* will be found distended rather than the capillaries. Both serous and sanguineous infiltrations may occur in the corpse from many other causes than inflammation.

There are many DIVISIONS of inflammation, some of them not very concurrent or consistent with others. Some of the least satisfactory, in a philosophic point of view, are among the most practically convenient. Such as that into "healthy and unhealthy inflammation." The first division that requires attention may depend either on the exciting cause or modifying circumstances, giving rise to the distinction of

Common and *Specific* Inflammation. The *former* is such as arises from mechanical injury, or slight physiological derangement in an otherwise healthy constitution. Its most favorable form is seen in what is called "adhesive inflammation," the healing of a cut finger. It is always to be understood when the *specific* is not expressly in question. This term is almost synonymous with "unhealthy," though common inflammation may loose its natural tendency to recovery, and would then be called unhealthy rather than specific. The latter word implies some particular known cause for the inflammation being peculiar and generally unhealthy in its character. This cause may be a contagion, affecting the part directly, or the constitution. Gonorrhea is an example of the former, Syphilis of the latter. Or it may be the result of an original debility or peculiarity of the constitution, predisposing the individual to inflammation, or to an unfavorable modification of it, when produced from ordinary causes. Thus, scrofulous swellings or other inflammations in scrofulous patients, are easily excited, but difficult to reduce. Their progress is tedious; and a thin fluid with curdy matter, takes the place of serum and healthy fibrin, or of consistent "healthy pus." After these explanations, it is scarcely necessary to define, very formally,

"*Healthy and Unhealthy* Inflammation." The former is "Common Inflammation" in its best or least unfavorable form, and under favorable influences. Though a morbid action, it may be under the circumstances of the case inevitable, or even desirable, as where it limits a still worse form of inflammation or actual "mortification." Its tendency is self-limiting and restorative.

The simplest form of *unhealthy* Inflammation is that which tends to self-diffusion, from lack of good fibrinous deposits. Its products may be deficient or excessive in quantity, as compared with those of "healthy inflammation," and always differ in quality, if not in sensible appearance. It is, therefore, an essentially destructive and dangerous state, requiring the interference of art, in cases where healthy common inflammation would do well enough of itself. The differences between them will be noticed when speaking of particular instances, as well as the general subjects of abscesses and ulcers.

An important practical distinction is into

Acute and Chronic, which may be plainly translated the quick and slow, or "active and passive." The limits between the two can not be defined by time alone, and the kind or degree of action is often a better criterion. Generally, however, the higher the inflammatory action and more obvious the symptoms, the speedier its termination, whether in restoration or destruction. Hence the necessity for some word to mark a certain degree of activity, and amount of immediate danger. That the distinction in question is not absolute, is shown by the necessity that often arises for such additional epithets as "sub-acute;" and still more clearly by the chronic forms being often a result or continuation of the acute. The effects of the two modes of action are, however, often sufficiently distinct. Hence the kind, as well as degree of danger, is different in the two cases.

Such expressions as "Adhesive Inflammation, Suppurative, Ulcerative or Gangrenous Inflammation," must be understood as descriptive, as denoting degrees, stages or accidental tendencies of the same action, rather than distinct kinds of diseased action.

All these peculiarities may depend on the state of the patient's constitution, the part affected, and a variety of other circumstances. They are, therefore, sometimes found enumerated among the so-called

TERMINATIONS of Inflammation. Almost every result enumerated under this head by one author, is criticised and objected to by others. Generally speaking, there are but two "terminations" of the disease in question, as of all others—convalescence or death. These, regarded as local, are technically called *Resolution* and *Mortification*. The latter, however, as well as transformation or permanent Degeneration of the part, may be classed as only a modification or result. It seems absurd to speak of inflammation *ending* in suppuration, and then of the suppurative process being still an inflammatory one. So of other "terminations." Still there is a tendency to one or other of the following results, and the sensible relief accompanying most of them, accounts for this expression continuing in use. These, then, are the results or effects of inflammatory action:

Resolution, when the increased action of the larger vessels is supposed to overcome the obstruction or debility in the smaller, and perfect circulation through the part is restored; increased or modified *Secretion*, from naturally secreting surfaces, as serum within the cavities and mucus in the outlets of the body; *Effusion*, which may be of three kinds, merely serous, sanguineous or of "coagulable lymph," serum containing plastic fibrin, and necessary to *Adhesion;* the discharge of devitalized fluid in the characteristic form of "pus," the "secretion" or transformation being called *Suppuration;* and finally *Gangrene*, or rather *its* termination, local death or *mortification.*

Among the *circumstances* that will render one or other of these tendencies more probable, the most important is the state of the patient's constitution. Health might be measured by the vigor, and freedom from aberration of "the restorative principle," *i. e.* by recovery from local injury without, or with little inflammation. It is a familiar observation, that "some people's flesh will not heal like others." Some are in danger of bleeding to death from the smallest wound, and are hence said to be of a hæmorrhagic diathesis. Others, it might be also said, have a suppurative or gangrenous or at least inflammatory diathesis. "A full habit of body," however, is not to be mistaken for the best possible health. Plethoric persons are in danger from too high inflammatory action, as are debilitated and emaciated ones from too low. Habitual beer drinkers are obliged to submit to amputation, for injuries that could easily be cured in others, not saturated with such a blood making beverage. Inflammation is of a higher grade, and more rapid in its course in the young than in the old, and in parts nearer the source of circulation than in the extremities.

The structure affected exerts a marked influence.

Inflammation in the *cellular tissue*, is favorably situated for effusion, after which absorption and consequent resolution can often be effected. When it is not, suppuration follows, constituting an "abscess." When the disease is not properly circumscribed as the true "phlegmon," and the pus, then sure to be unhealthy, is infiltrated through the cellular structure, a form of inflammation more or less resembling erysipelas ensues. When near the surface, the healthy abscess is the common boil. This, though the very type of "healthy inflammation," may degenerate, some even believing it, in constitutions at the same time weak and irritable, to become the carbuncle. (For a different view see Lecture on Carbuncle, etc.) Cellular inflammation, when it becomes chronic, may produce various tumors, and even schirrus, or the malignant induration that precedes cancer.

Inflamed Glands resemble the cellular structure in tendency to swell; but they are more apt to suppurate, and in chronic cases to harden.

In the *skin*, inflammation tends to spread, and by its effusion separates the cuticle, producing what is called vesiccation. The effusion is usually merely serous, but in some cases contains fibrin, occasioning a thickening. After removal of the cuticle, the exposed cutis is liable to suffer from cold air; from which, however, it is protected, if not artificially, by a thickening of the matter effused into what is called a scab. Small and distinct elevations of the cuticle are called "vesicles." If they contain pus instead of serum, they are distinguished as "pustules," and the process of their formation "pustulation." Pimples, rashes, etc., might perhaps be mentioned as peculiar results of cutaneous inflammation. The skin is more disposed to ulceration and gangrene than many other tissues.

The *mucous membranes* have a strong tendency, when inflamed, to relieve themselves by suppuration; this process appearing to be substituted for the ordinary secretion of mucus. When the inflammatory action is very violent, however, the "coagulable lymph," which is the common product in other parts, may be thrown out, as in croup, when it organizes into an additional or "false membrane." Were adhesive matter as frequent or as capable of organizing itself in the mucous outlets, as in other parts, the result would be frequently fatal. The suppurative "secretion" is often only partial, and the discharge spoken of as "muco-purulent." What is called passive hæmorrhage is another not unfrequent result of mucous inflammation. As structural results, contraction, thickening, and softening, may be named.

In the SEROUS CAVITIES, where the danger is reversed, so is the relative order of suppuration and adhesion. The natural tendency is for the inflamed membrane to coalesce with its opposite fold. The consequence of this "termination" is often of an *appreciable* disadvantage. Chronic inflammation of these investing membranes, however, is liable to relieve itself, though unfortunately *not* as a termination of the diseased action, in serous effusion or exhalation, constituting dropsy of the part, as hydrocele, hydrothorax, etc. The effusion may be bloody, but is commonly of a whey-like color and consistency. The membrane itself may exhibit ecchymosed spots. Neither ulceration nor thickening, except by adhesion, as before mentioned, is frequent in these parts.

In the Fibrous Structures, the characteristic effusion is gelatinous, within which bony matter may be afterward deposited. Independently of this, their substance is liable to be thickened and indurated. Their liability to ulceration and gangrene has been disputed.

Tendons and *Ligaments* are both described by Sir Astley Cooper as "not very susceptible of inflammation," at least in healthy persons. The pain, however, produced by injuries of the former, particularly punctures, is more than a set off for this exemption, oftener producing tetanus than in any other part. The *synovial membranes* connected with the ligaments, are very liable to take on inflammation and advance to the suppurative stage. When they do not, the substance of the ligaments thickens and the joint is greatly enlarged. When matter is formed *under* tendons, it burrows far and produces violent irritative fever. The same may be observed of fasciæ, inflammation *in* which has also a great tendency to become diffuse.

Within the substance of the *muscles*, inflammation is characterized by "twitchings," particularly noticeable after comminuted fractures.

The substance of the *vessels* or *nerves* may be itself the seat of the inflammation. Phlebitis is more common than inflammation of the arteries, both as a spontaneous disease and after mechanical injuries. In the latter case the termination is often in adhesion. This takes place most frequently at the valves, "gluing the sides of the vein together and preventing farther mischief." The affected vessel may be traced as a thick hard cord, and is very sensitive to pressure. When not thus limited, "phlebitis" is distinguished as "diffuse," and is then a very serious disease. The great danger is from discharge of pus into the current of the circulation, giving rise to extreme depression, restlessness, hectic fever, etc., with secondary inflammations in other parts. The arteries are seldom separately inflamed, except from wounds. Inflammation from the application of a ligature may extend to the heart itself. "This," says Cooper, "I have frequently observed in patients who have died from constitutional irritation, after an operation where a ligature has been made on an artery." Gangrene of the affected vessel is an occasional result. Inflammation in the nerves, "though very painful at first, is followed by little irritation."

Inflammation in *cartilage* tends to ulceration, and destruction of the joint or bone with which it is connected. All the usual phenomena of inflammation take place in the BONES; their gangrene and mortification, however, are usually spoken of under distinct names, as "*caries* and *necrosis*." The result of their suppuration is often diagnostic, "bone-pus" being so rarely healthy, that it is synonymous with ichor, generally fœtid, and often quite dark.

CAUSES.—Of the "proximate cause" of Inflammation enough was said, when speaking of its disputed "nature." "Exciting causes" have been divided, like the disease, into "common and specific," the former affecting more or less all persons—as exposure to heat and cold; the latter requiring a peculiar susceptibility, as well as producing peculiar results, like the various contagions. An obvious division is into those which act *directly* on the part, producing structural injury in the first place, and only affecting the functions or exciting inflammation secondarily—such as mechanical violence and chemical corrosion—and those which induce visible structural change, if at all, only through the functional disorder (it may be the proper stimulus of the part or organ, as volition in the case of excessive exertion). Thus the structural effect is not only *indirect* but often on a different part from that to which the cause was applied, as a current of cold air. Cold and heat, however, as well as other agencies, may belong to the direct or indirect class, according to their intensity.

ADHESION, or "Adhesive Inflammation," as it is called, in consequence of generally occurring in connection with inflammation, is properly the uniting of divided or contiguous parts, and may occur without any such degree of incited action as amounts to inflammation. This is the case under the most favorable circumstances, in what is technically called "union by the first intention," when an incised wound or cut heals without new formation or leaving a cicatrix. More commonly, however, the term is applied to the process of union between divided and other surfaces already *inflamed*, and also to the coalescence of tissues by fibrinous matter, as around an abscess, and to new growths on the surface of membranes, as in croup. It limits cellular inflammation, and is often a result of the state in serous membranes, appearing to divert the excessive activity or "force" then generated. This is one reason why it is often spoken of as a termination. The *pain* attending this process is "thrilling," while in

SUPPURATION, it is dull and throbbing, with a peculiar sensation of uneasiness in the part. When the suppurating tumor is near the surface, the formation of matter is preceded by flush on the skin above, and followed by the tumor rising and becoming softer at some point, where a *liquidity* or "fluctuation" will be felt on pressure. The abscess is then said to have "pointed." The extension of matter will be attended with constitutional irritation, rigors and subsequent febrile reaction. The time usually requisite for inflamed parts to relieve themselves, by this process, is from one to two weeks.

What is called "healthy" or "laudable" pus, is a thick bland homogeneous fluid, nearly white, and of the consistence of thin cream, with a peculiar smell while warm, and it is said a sickening taste. It differs from the natural secretion of mucous membranes, in containing swollen and decomposing globules, and in sinking in water, and being rendered gelatinous and ropy by the action of potash, while mucus swims and is readily dissolved by the alkali. Pus is considered unhealthy whenever mixed with blood, in which state, usually called sanious, it will often irritate the parts with which it comes in contact. The more common variation from the healthy standard, is by its being too thin and serous, when it is called ichor or ichorous. *Fœtor* is another symptom of unhealthy suppuration. Healthy pus answers many secondary purposes, besides relieving the system of dead or dying blood. It is nature's own "healing salve," protecting parts from the air and promoting granulation. It is very slow in putrefying or undergoing farther chemical transformation, perhaps from the very fact of having already undergone a certain degree of decomposition. When improperly constituted or elaborated, however, it may possess every variety of bad quality, from the slightly irritating to the specific poisoning properties of contagia. Even the healthiest pus seems to communicate the suppurative quality to any other parts than those discharging it, unless when they are protected from it, as by cuticle or epithelium. Its injurious effects when taken back into the blood, and thrown by it on internal parts, are well known.

Abscess, as a result of suppuration, has been before explained. The pus is confined by the inflammatory effusion itself. The abscesses produced by *acute* inflammation generally run their course, including the necessary ulceration for the discharge of matter, in less than three weeks. The situation of the matter has, however, much to do with the period, as well as the amount of danger, and will often of itself make the case necessarily chronic.

Ulceration has usually been described as an exaggeration or excess of the ordinary absorbant process, as adhesion or fibrinous formation is of the ordinary nutritive function. Mere pressure is well known to stimulate the absorbents. An unusual flow of blood has the same effect. In inflamed parts both these causes concur, the ulceration usually following the effusion or suppuration. When necessary for the discharge of matter, the ulcerative action tends toward the surface of the body—a beneficial provision of nature, "explained," however, by the greater irritability conjoined with less tenacity of life, in the more superficial textures. For the same reason, newly formed parts, the result of recent "adhesive" organization, and parts at the greatest distance from the center of circulation, are more liable to ulcerate than others. Textures, however, that have little vascularity, are proportionably indisposed to ulceration, and more liable to mortify, as the tendons. Though the swelling, etc., of ordinary inflammation may be considered a cause of ulcerative absorption, the latter may go on, when once instiuted, where there is no longer effusion or tumefaction. Certain orms of the ulcerative process are found to depend on a peculiar order of cells, and to continue until these are destroyed. [See last Lecture.]

The ulcerating part appears and *feels* worm-eaten—"as if insects were about it." The constitutional symptoms are moderate, the fever rather hectic than inflammatory.

Particlar parts in a state of ulceration, or "ulcers," will be more particularly considered hereafter in connection with their treatment.

Granulation is the name given to the process by which lost parts are reproduced, and to each little fleshy pimple or particle of the new structure. These are red in color, and generally protected by a covering of pus. They rise in successive layers, as the fibrin is thrown out, and the vessels from the parts beneath elongate and branch through them. After the cavity is completely filled up, and closed over with skin, "the granulative structure is absorbed and a contracted cicatrix is left." When divided parts, or the walls of emptied abscesses are not brought together, healing commonly takes place by means of the granulative structure. Granulations, however, readily unite with each other, and the requisite contact can be effected after the process of filling up has commenced. It is by the union or inosculation of granulations, spoken of, that new skin or

CICATRIZATION is effected, cuticular granulations proceeding, with their necessary vessels, from the surrounding sound skin, and uniting with each other as they advance toward the center, as well as with the granulations beneath. A fresh cicatrix is redder and more vascular than the original skin, but afterward becomes less so, the vessels contracting, and that part of the surface having ever after less vitality.

LECTURE III.

TREATMENT OF INFLAMMATION.

Blood letting—Objections to Venesection, theoretical and practical—Local Bleeding, Leeches and Scarifying—Dry Cupping.

THE first thing that occurs to the mind of old school practitioners, if it is not actually put in prctice in all serious cases, the first measure directed in all their books, is

BLOOD LETTING.

It is true there is a great difference in regard to this measure in the practice of different individuals, and generally speaking, much less blood is taken now than formerly. With some of the class of physicians in question, bleeding is now the exception in cases where it was once the rule. Its direction by the authors is accompanied with so many conditions and qualifications, that a cautious beginner can never be sure when he is warranted in resorting to this once never failing expedient. Still it is *the* remedy of the books, and sufficiently relied on for other better means to be habitually neglected, even when that also is omitted. A living authority, who for more than a quarter of a century has been a teacher in one of the first schools in America, in attending to the uncertainty of the signs for omitting or *repeating* venesection, concludes that, " perhaps the most certain indication of the presence of inflammation is the continuance of *pain*," and further assures us, that "so long as *this* remains severe, *we can scarcely go wrong in the detraction of blood*."* The insidious relief of pain has long been the tempting motive for bleeding, and often the measure of the amount taken; if its existence were indeed made the criterion for the measure—as seems to be the design of the celebrated professor alluded to—what a sanguinary business would medicine become?

Local suffering, however, even in connection with other more decisive evidence of dangerous inflammation, can not safely be made our only consideration, when we come to treat a case, or lay down general rules of treatment. General disorder is the necessary accompaniment of the local disease. The over distension and over action of the part are necessarily at the expense of the rest of the body. If there is "increased vascularity and sensibility" in and about the inflamed part, there is a decrease of *both* throughout the rest of the system. This inequilibrium of circulation and sensibility is generally obvious. A deficiency of blood in the extremities and throughout the general surface, (unless the inflammation be located in the skin), is manifest in almost all cases. "Dryness of the skin and decreased secretion generally" are laid down among the diagnostic symptoms.

The correction of this inequilibrium is well known to be one of the surest means of relief, and signs of the local disease having ceased. If you can bring it effectually about, you have secured "resolution;" if not, suppuration or sloughing must generally ensue.

Now blood letting, by merely lessoning the general amount of the circulating fluid, can certainly have no direct tendency to bring about this desirable result. The amount removed is drawn in at least equal proportion from all other parts, which then have an inadequate instead of a superabundant supply.

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* Gibson's Surgery, Vol. 1, p. 28.

The inequilibrium must therefore be increased instead of lessened. The whole system must be thus debilitated, and rendered less capable of resisting the morbid influence, or of sustaining the effort necessary to repair the damage already done. The heart is less capable of propelling the blood through the extreme vessels, and through the deranged part; and while that part is weakened in its recuperative resources, it is not proportionately relieved of oppression. It is not the more energetic flow of blood to the part, but its obstruction there, that *adds* to the disease and constitutes its danger. All experience proves that general vascular excitement is not necessarily of itself a dangerous condition. Still to lessen the force, rather the *rapidity* of the circulation for a time, is very desirable when accomplished without permanently weakening the system.

That the loss of blood is debilitating, no one pretends to deny. It is the most directly debilitating of all measures used in medicine, and its weakening effect is generally proportionate to the amount of blood taken. It is only in cases of "oppression," that is, of *apparent* weakness, that the pulse rises and the patient's vigor revives after a bleeding. The patient is nevertheless debilitated in reality from the loss of blood, though apparently stronger than when the vital powers were oppressed. The removal of the oppression may more certainly be accomplished by other means without any risk of debility.

Nor can it be urged that venesection has any tendency to re-establish the cutaneous function. When, indeed, it is carried so far that the debility approximates prostration, *ad deliquium animi* as the books say, then there is perspiration enough, or rather *deliquium* enough of the blood as well as of the senses; for it is not a real perspiration from the proper stimulation of the secreting organ, but a mere exudation from its collapse, just as the fainting also results from a similar deficiency of stimulus on the brain. It is a cold, clammy death-sweat. In the natural action of this function, or after the use of proper stimulating diaphoretics, the whole surface of the body is in the active condition, warm and red, and the pulse full and soft.

Experience confirms physiology in showing that blood letting can not effect the object for which it is practiced. It is now indeed sometimes said that the bleeding is rather a preventive than a curative measure; that it is chiefly useful as a means of gaining time or facilitating the cure. In other words, it is found that this measure does not lead to the cure of inflammation, without the aid of others—which other measures we contend, would if carried to the proper extent, have accomplished the object in a far better and safer manner. Even if the desired results *were* as unquestionably attained as might be supposed, from the long prevalence of the practice, still the risk of other results is sufficient to make it doubful whether it ought in any case, or ever, to be resorted to. It could be shown, I have no doubt, that no one can bleed in any given case without a violation of some or other of the rules laid down for the use, or rather the disuse of the measure.* The exceptions to bleeding for inflammation are now so many, that they will no doubt become the rule, as they have so long been with us. The Reform school did not set out with an absolute proscrip-

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* "Of all the therapeutical appliances," candidly remarks Professor Flint, of Louisville, in a note to Druitt—(where he seems to regard bleeding, at least, in case of internal inflammation, rather as a *preventive* than *curative* means—a distinction he tells us to be *always* borne in mind by the surgical practitioner, in order to determine the extent to which he may *safely* carry the means of depletion and depression; concluding that of all measures this of direct "depletion and depression," is the most dangerous and presumptuous; or in his own words, which, I began to quote)—"Of all therapeutical appliances, there is none in which *art ventures* on such extreme *liberties with nature* as in this of blood-letting; and unfortunately there are few in regard to which the *principles* that are to regulate its *administration* are so *unsettled* and *contradictory*." Among the principles or rules "most approved" of by "the authorities," he refers us to the text (Modern Surgery, page 49 et seq.), where among other things we find the following:

"As a general rule, the blood should be permitted to flow"—("as quickly as possible," "from a large orifice," etc.), "till paleness of the lips, lividity about the eyes, sighing, nausea, fluttering pulse, and relief of the pain, indicate the *approach* of syncope." Diseases in which bleeding "is most *injurious* and worst borne are putrid fevers and *diseases of debility*." (Page 50.)

"But the junior practitioner must bear in mind that he may occasionally meet with some *thin, bloodless* patients, whom it would be very injurious to bleed, but who nevertheless, from some peculiarity of constitution, do *not faint*, even though *bled to excess*." Yet we were told on the previous page that, "it is often *absolutely necessary* to bleed persons, in acute diseases, who are *extremely debilitated*."

Not only is the bleeding of certain *thin* persons doubly dangerous, as we have just seen, from their systems not knowing when to give the fainting sign of "hold, enough!" but the *fat* and some of the *fleshy* are also expressly exempted—"it will be *borne worse* when the muscles are large and flabby, and the pulse habitually open, soft and full." "Fat people generally bear bleeding worse, and contain in fact less blood, proportionately to their bulk, than those of a spare, lean habit and rigid fiber." "It will be borne *worst of all*, when the complexion is sickly and pale—the pulse quick, small and feeble—the lips, conjunctiva and tongue pale."

"If there should happen to be a state of passive dilatation and weakness of tion of venesection, but with a determined preference of other means. The maxim was "Rarely, if ever bleed." This at least was the case of many of our older friends, as well as Dr. Beach. Many of the younger members of our body have never opened a living vein, and never had occasion to do so. Those who still kept the lancet in reserve as a *dernier* resort, have had it rust for want of use; and the longer they have done without it, the less they think of it as a possible resource in emergencies. Since we have, then, proved that we have better as well as safer means, it would not only be criminal in us to persist in its use, because convenient or supposed to be sanctioned by authority; but we should be rendering ourselves responsible for homicide, guilty as accessories before the fact, if we did not use all honorable efforts to discountenance the practice.

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the heart, *syncope* would most likely be *instantly fatal*; and if there should be *any organic* disease which impedes the *formation of blood*, its loss is liable to be followed by *irrecoverable sinking* and *exhaustion*." (Pages 50 and 51.)

Yet with all these dangers and exceptions, "the first and most important measure" in inflammation is still "general blood letting; which, if *carried far enough*, induces a state of insensibility and suspended circulation, to which the name syncope or fainting is given." (Pages 48 and 49.)

It is true we are afterward told to stop short of this desirable state, and the "*approach* to syncope" is made "the general rule;" "because, *after* the depressing effects of *bleeding* there naturally ensues a degree of *reaction; the pulse rising* in frequency and the local *pain returning;* and this reaction will be the greater, if the venesection has been carried to the extent of producing full syncope." *If* this reaction (with "rising pulse and returning pain!") exhibit "well marked inflammatory symptoms, the *bleeding* must be *repeated* till the disease is vanquished; *provided that the strength permit*."

"The propriety of the second bleeding *must*, in a great measure, *be determined by the effect* which the first has had on the pulse; for if that be more frequent and quick, or more sharp and jerking, instead of slower and softer, it would seem that the bleeding had *diminished* the *strength more than* it had reduced the *disease*."

Not only is the degree of this "*tolerance*" of bleeding, as it is technically called, (varying, as it has been *experimentally* discovered, it does, with the different diseases as well as classes of patients for which it is nevertheless said to be indicated), made the criterion for a repetition of the measure, but for other measures also, and even an "aid to" or *test* of *diagnosis* itself! "If faintness occurs from the loss of a very small quantity of blood, it will be certain that it is *not* an *inflammatory* but nervous" disease, "or that if inflammatory, it *must be treated by other measures than blood letting*." So that even in inflammation, syncope, with all its confessed evil of aggravated reaction, *may* ensue on but slight loss of blood.

The danger is still greater of *not fainting* when the operation is not conducted exactly *secundem artem* (as well as sometimes when it is, "owing to some peculiarity of constitution,") "the bleeding may be continued almost to death, without the occurrence of syncope." (Page 49.)

Topical Bleeding

is a very different measure from venesection, though even this is liable to *some* of the same objections. The same quantity of blood, taken slowly and gradually from the small vessels of the part, will not produce the same immediately dangerous effects. There is no shock produced upon the general system, the vessels having time to contract so as to reduce their caliber to the amount of fluid contained. Still, if much blood be taken, even in this way, evil consequences must ensue.

But the great objection to local bleeding is, that the necessary applications can not be made directly to the part affected; and any partial attempt near it is likely to draw the blood in that direction, and add to the congestion already existing. Unless the vessels of inflamed parts can be "entirely drained,"

"Tolerance ' is generally represented as greater, and the necessity for bleeding more urgent, the more vitally important the organ affected. But this again depends on the time when it is resorted to, our author's American annotator assuring us that, "after violent reaction," in other words, when there is actual inflammation, "the utmost discretion is necessary, in the use of this potent means." With respect to the disease, or injury, "bleeding is not well borne," continues Druitt, when there is *great depression* of the vitality, whether from the peculiar nature of the morbid cause, or the inflammation excited, "nor in the case of an injury requiring *great constitutional efforts* for its restoration, as a compound fracture; nor if the disease be advanced toward *suppuration* or gangrene."

To vary these quotations with one from a writer of a very different character, supported, however, too strongly, by less popular and more professional authority. After showing that the diseases of the poor in Europe arise in a majority of cases from defective food and impure air, creating a deficiency of blood; "yet," continues Dr. Dickson, "enter the crowded hospitals of England, and see how mercilessly the lancet, the leech and cupping-glass are employed, in the diseases of the poor. What a contrast to the eager pupils and attendants thronging around their beds—those attendants with bandage and basin, ready at a moment's notice to take from the poor creatures whatever quantity of life blood solemn pedantry may prescribe, as the infallible means of relieving their sufferings."

How well does this "rhetoric" agree with the confessed *results*. "*Patients* who have been apparently *cured* by large bleedings," which, according to Dr. Rutherford, of Edinburg, "have conquered pain in the first instance, *remain* eventually longer *in the hospitals* than those who have not been so speedily relieved [other more efficient means not having been resorted to]; moreover you will find them *return* again, with dropsy and chronic affections."

"One objection to venesection," says one of Great Britain's most distinguished surgeons, "is that, after frequent and copious venous hæmorrhage, the internal vessels become gorged with blood, and *a disposition* to *apoplexy is induced.*" *Liston, page* 26.

and the surrounding ones nearly exhausted also, it is confessed that little or no good can be done.

Leeches are, in some countries, and by some practitioners in this country, the most approved means of local depletion. But of these agencies in surgery it may be said, as of blood-letting in general, that the cautions necessary to be observed in their use, nearly amount to a prohibition.* Besides, they must not be applied directly to the part inflamed; and their sucking off blood from any other part can have little influence, except as it lessens the general circulation, or acts as a derivative or counter irritant. In the latter case, their poisonous effects are often more to be dreaded than the original disease. We frequently read of fatal hæmorrhage from applying leeches to children, and adults do not always escape injury. It is impossible to know before hand what bad effects will follow their use; and, inasmuch as all cases to which they are applied, can be cured by other means, I would never recommend a resort to them.

Scarifying is only less objectionable than leeching. Scarification of the inflamed part, in acute disease, aggravates the disease, and renders it more troublesome to heal. I do not mean to say that scarifying is never beneficial; but that the benefit in addition to that of the cupping used at the same time, is due to the additional local counter irritation, and not to the amount of blood taken away. The revulsion and counter irritation are, perhaps, more complete and permanent after the scarifying; but, according to my observation, the amount of good done is never in direct proportion to the quantity of blood drawn, but rather in the inverse proportion.

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* "Leeches," we are told in a recent work, "should not be applied in *females* where the cicatrix would be unsightly. In *children* large superficial *veins* should be avoided. Nor should they be placed on the *eye-lids*, since in this situation they are apt to cause œdema and ecchymosis in the part; nor where *cutaneous nerves* abound, as erysipelas is apt to follow. They should *not* be applied directly to *the inflamed part*, for the reason that the stimulus of their bites adds to the existing inflammation; nor should they be applied near an acute *ulcer*, for their bites are apt to degenerate in this case into ulcers; if the ulcer be of a specific character, the bites become inoculated, and thus extend, instead of decreasing the ulcerated surface. Neither should they be placed where *bandages* are of paramount importance, as in fractures, for in such cases *the bites are apt to inflame and ulcerate*, and thus cause the removal of the apparatus at a critical period." *Hasting's Practice of Surgery, page* 42.

LECTURE IV.

TREATMENT OF INFLAMMATION CONTINUED.

General Measures, evacuant and revulsive—Bathing, simple and medicated—Simple and Alcoholic Vapor—Local Treatment—Compression—Fomentations—Cold Water—Astringents—Arnica, etc.—Counter Irritants—Emollients—Antiseptics—Chronic Inflammation.

Dismissing the subject of abstracting blood, as a measure not only unnecessary, but highly injurious, I proceed to notice a

Course of Treatment

sanctioned by philosophical reasoning, and confirmed by the experience of thousands. As was remarked at the outset, the disease is not merely a local one; and therefore,

General Measures are of paramount importance in all serious cases of inflammation. Among these, external applications to the whole surface of the body, are not less important than those addressed to the stomach and bowels. For aiding in restoring an equilibrium of the circulation, I hold *bathing* more indispensable than diaphoretics internally administered. For these ends, then,

Bathe the general surface with the *alkaline wash*, combined with the alcoholic stimulus; and administer active hydragogue cathartics, followed by diaphoretics, to keep up the activity of the cutaneous emunctories. It will often be necessary to use nauseants and emetics.

As a *cathartic*, the Com. Powder or Syrup of Senna combined with equal portions of Cream of Tartar, has advantages over most others in mild and speedy efficiency. Give it so as to operate thoroughly, and several times. A large dose with a small portion of some stimulant, say from three to five gr. of capsicum to one or two drachms of the mixture given in substance, will frequently operate in an hour, almost always in less than two hours. A syrup made from the same ingredients will operate still more readily. If given in warm water its effect may be still farther facilitated; but it may possibly produce more or less nausea. It may, therefore, be necessary to administer it cold; but it should always be well sweetened and made as agreeable as possible to the patient. Its effect may be kept up by smaller doses, as long as it continues to be indicated, without any risk of permanent debility or of inflammation, or even irritation of the stomach and bowels.

Another suitable *cathartic* may be made of Senna and Manna, *aa.* ʒij, Annise or Fennel seed ʒj, Epsom salts ʒjss, boiling water ℥iv—infuse, strain and sweeten. Dose from 1 to 2 fl. oz. every half hour. This preparation will generally operate in from one to two hours; and may be continued, producing copious watery discharges, without causing any irritation or pain after the first operation. At the same time it promotes an active secretion of urine.

If the *liver* requires special medication, from a quarter to half a grain of Podophyllin may be given, with good effect, every three hours, in connection with either of the foregoing hydragogues. Or a simple combination of the Podophyllin and Cream of Tartar, in the proportion of half a grain of the former to half a drachm of latter, may be found a good cholagogue purgative; but as this is slow in its effects, it will not be so proper where an immediate operation is desired.

In extreme cases, where it is necessary but difficult to procure a speedy evacuation, you may give, after or in connection with either of the former, a pill every half hour, composed as follows: ℞. Ol. Tigl. gtt. x. Ol. Anisi gtt. xx—Sapo. cast. q. s.—fiant pillul. xl. One to be taken every half hour till an operation. In this combination the effects of the Croton Oil seem effectually modified, so as to be no longer calculated to produce inflammation or irritation.

Some of the foregoing, or articles of a similar character, i. e., such as produce copious serous discharges, are indicated in inflammation by the state of the blood. Not only is it well known that the serum, as *liquor sanguinis*, has an excessive quantity of fibrin, but chemical analysis has detected this fibrin in the aqueous discharges from the bowels. To produce this drain, however, such articles should always be used as will not keep it up too long, or permanently irritate the bowels. The effects of the articles recommended are soon over, unless designedly kept up by repeating the medicine. In connection with these evacuants, or as soon as they have ceased to act—

Unirritating *diuretics* and mild *diaphoretics* should be freely used. I rarely recommend, and never in this stage of inflammatory disease, any preparation of opium. Combinations may be made which are sufficiently *anodyne*, and, at the same time, both diuretic and diaphoretic, of such articles as the following: Asclepias tuberosa, cypripedium pubescens, ictodes fœtida, polygonum punctatum, matricaria chamomilla, and anthemis nobilis.

But of all means for equalizing the circulation and excitability of the system, after the preparation by catharsis, and in many cases without it, when the bowels have not been long constipated, by far the most effectual are

Nauseants and Emetics.—The articles given for this purpose, like those for operating upon the bowels, as before stated, should be such as are not likely to produce irritation or inflammation. Neither should they be such as will have a tendency to leave permanent prostration. The fashionable "antimonials" are liable to both these objections. Our common acetous emetic (Form. No. 4) may be given in a slow and gradual manner, in connection with some diaphoretic infusion, rather of a stimulating character, such as chamomile. Begin with a half drachm dose in an ounce or two of sweetened tea. Let it be repeated in from ten to twenty minutes, and continue increasing the dose and lessening the interval, till in the course of an hour or two, according to the urgency of the case and the necessity of the vomiting, you have reduced the time to ten minutes, and raised the dose to three or four drachms. It may be given much more slowly than this. In many cases it is necessary and highly beneficial to keep the patient continuously nauseated, just below the vomiting point, for six, eight, or even twelve hours. During such an operation, you may permit slight emesis every two or three hours, the patient drinking freely all the time of warm, diaphoretic teas. This long continued nausea is the most powerful means of keeping up a determination to the surface, and, in connection with proper external applications, procuring a copious perspiration. Using such means, there is no danger of either too sedative or too irritant an effect. The acetous tincture of lobelia, ictodes and sanguinaria, has a peculiar anodyne and soothing influence.

Besides the applications already directed to the general surface, other *revulsive* means are still to be used. The feet and legs should be bathed in hot water and well rubbed. Applications may also be made over the whole abdomen, and the whole course of the spine, of either cups or stimulating liniments, followed by mustard, when the nature of the case or the constitutional state of the patient does not contraindicate. Stimulants may sometimes be beneficially applied to the whole surface of the body. All these means tend powerfully to determine to the surface and *from* any inflamed part.

But there is yet another general means, which though simple and easy of application, is, perhaps, all things considered, the most efficacious of any in promoting a flow of blood to the extremities and general surface. It is

The ALCOHOLIC VAPOR. [See introduction.] It may not be always practicable or necessary to use this measure; but when other means fail, it should never be neglected; and it may and should be often resorted to in the first instance. A moment's reflection will satisfy any one as to what *must* be its power in relieving local and internal congestion or inflammation; and experience more than confirms all that could be anticipated from it. By the stimulus of the alcohol, as well as heat and moisture, all the superficial vessels become and remain distended with fluid, containing probably three or four times their average supply, although the perspiration is all the while flowing out profusely, and rapidly diminishing the whole volume of the circulation. By supplying the patient freely with cold water, this general drain may be kept up for hours at a time, without any sensation of faintness, though the patient be kept (as in that case he should be), in an upright posture. Any sensation of thirst shows that there is a demand in the system for a supply of fluid. While the general amount of circulating fluid is thus lessened more effectually than by venesection, the remaining part is still constantly attracted away from the part in danger, to the most extensive and variable tissue in the system. The whole superficial part of the vascular system will remain filled to repletion for several hours after the operation. The measure is not only a revulsive, but a *rubefacient* counter-irritant *to the* surface of the *whole body*.

Most cases of violent inflammation supervene suddenly and accidentally on the state of ordinary health. For example, an individual in perfect health is exposed to a current of air, perhaps after fatigue. In six hours he is attacked with pleurisy or inflammatory rheumatism. Or he has suffered some severe mechanical injury, a fracture or dislocation, with extensive laceration, and dangerous inflammation is set up in still less time.

Nothing has happened to cause too much or too little blood to be in the system. The evil and danger (so far as concerns the blood) consist in the unequal distribution of the amount that, a few hours before, was plainly just enough for the harmonious stimulus of all the vital functions. If too much goes to the injured or threatened part, there must be a proportionate deficiency in all other parts. It needs no depression or subtraction of the general vitality to relieve the inflammation. The system at large is not too strong, nor does even the affected part require any weakening. On the contrary, it makes, when injured, an extra demand on the power of its preservative and recuperative principle. Yet it is in such a state as not to be able to perform its ordinary functions, even if supplied with no more than the proper amount of blood. More than the regular supply, however, is now furnished. It is desirable not only to lessen this morbid excess in the part, but for a time to reverse the inequilibrium—to withdraw from the weakened part even a portion of its usual supply and stimulus. This is most effectually and safely done by keeping the vessels of the extremities and surface preternaturally distended; especially after we have drawn off a portion of the excessive fibrin by profuse hydragogue evacuations. Venesection has no direct tendency to correct either the bad distribution or constitution of the blood. Even when the loss of blood by venesection has been compensated by the activity of the absorbents, and by the rapid process of sanguification, the change of the constitution of the blood by such substitution does not improve its character, as it is simply diminished in its globulous elements, without any material change in the quantity of fibrin. The quantity of fibrin necessary to the inflammatory state is so small (but a fifth of one per cent. above the average amount) that it is readily regenerated while irritation exists, and will continue to appear even if we drain the last drop of blood. Hence the proportion of fibrin is almost as much in excess, after free depletion, as before the first bleeding. That drain from the mass of circulating fluid, which is produced in so destructive and unsatisfactory a method by venesection, is accomplished with great facility, and in a far more beneficial manner, by the use of the proper cathartics, sudorifics and diuretics.

Nature soon informs us of any danger in carrying the *natural* evacuations too far, and of the proper means of correcting the error. The watery constituents of the blood are easily resupplied. The evacuation being gradual, also, allows any previously distended vessels to contract their caliber to the lessened supply. I have known a patient drink half a gallon of water in the course of an hour, while under the influence of the alcoholic vapor, without suffering any inconvenience from the distention, which was relieved by the rapid absorption of the fluid, stimulated by the profuse discharge from the surface.

To show the efficacy of this little appreciated measure (the alcoholic sweat) I will state, that in the severest cases of inflammatory rheumatism, in the early as well as the later stages, I have never known it fail to relieve. I have used and induced others to use it in many cases in this city, as well as on the lake shores of the North, where the disease is much more prevalent. In no case that I have seen or heard of, has the patient failed of getting sensible relief in less than half an hour, or of getting entirely free from inflammation, by repeating it two or three times daily for three, four or five days. Indeed, a perfect cure is frequently effected in the course of twenty-four hours, where no evacuation was imperiously demanded. The average time necessary, according to my observation, for the cure with this measure (other appropriate means not being neglected, but this mainly relied on), may be stated as sixty hours, or two days and a half. If adopted early and thoroughly carried out, no case need continue over four or five days. Compare these results with those of the blood letting and colchicum treatment, with the confinement from one to three months, and saturation with opium to relieve the pain, to say nothing of the frequency of such sequelæ as organic disease of the heart—a consequence which I have never heard of from inflammatory rheumatism, when promptly *expelled* by the means here recommended!

[The means heretofore named are probably the most effective in severe cases, but in minor ones a much more pleasant course may be adopted. It is now generally recognized that we can control the circulation by the use of the special sedatives, and then by employing means to increase the secretions, the inflammation will soon subside. As in the treatment of other diseases, the sedatives are best employed in small doses, as: ℞. Tincture of Aconite ʒss, tincture of Veratrum ʒj, water ℥iv, M.; a teaspoonful every hour. If there is pain in the back and muscles, with a feeling of soreness as if bruised, ʒj of tincture of Macrotys may be added. If there is irritation of the nervous centers, manifested by restlessness, pain in the head, contracted pupils, etc., add the same quantity of tincture of Gelseminum. If symptoms of congestion are prominent, ℞. Tinct. Belladona ʒj, tinct. Aconite ʒss, Water ℥iv, in the same dose.

This treatment, associated with the hand-bath and hot foot-bath, as heretofore directed, will rarely fail of relieving the symptomatic fever by the second or third day. Then give the patient an alkaline diuretic, as a solution of Acetate of Potash, and a diaphoretic, as equal parts of compound powder of Ipecac and Opium, and Asclepin, and the two most important depurating organs will be set in motion. Now small doses of Quinine and Hydrochloric Acid, with nutritious food, will rapidly finish the work.

The importance of diet can not be overestimated. Many cases will get along kindly and with little trouble, if the stomach is placed in good condition and kept so, and the patient has a liberal alllowance of milk or beef tea, that would be very severe, and probably terminate fatally under ordinary treatment.

In cases of surgical disease the treatment will be very different. I allude to those in which there is marked depression and loss of strength from the commencement. Here the use of tincture of Muriate of Iron and Quinine will take the place of the special sedatives, and an infusion of Serpentaria will prove the best diaphoretic.

If there is evidence of purulent absorption or tendency to yæmia, I should use: ℞. Tincture of Muriate of Iron ℥ss, Glycerin, Simple Sirup, aa. ℥j, Quinine, grs. xx, M.; in doses of a teaspoonful every three hours. Also, a solution of the Sulphite of Soda in the proportion of ʒiij to water ℥iv, in the same doses, *alternated* with the first.]

Local Treatment may do much, especially in the early stages of inflammation.

Before proceeding to more strictly topical applications, I may mention *Compression* as a means of *preventing* the establishment of inflammation. This may be successfully resorted to in a large proportion of cases affecting the extremities, provided it be thought of early, before any organic or great functional change has yet occurred. A roller should be applied from the extremity of the affected limb, and carried considerably above the affected point. [See Introduction, and Lecture on Chronic Ulcers.]

Fomentations are often of great efficacy, such, for example, as one of hops, which is in great use, though a far better article will be found in a combination of lobelia and eupatorium. One equally as valuable, if not better in recent inflammation, especially arising from wounds or injuries, is the Ambrosia elator (Roman wormwood). It should be used green if practicable, bruised and covered with warm vinegar. Cloths wrung out of warm alkaline solutions and laid on the part, produce very beneficial effects in recent inflammation; but care should be taken not to have them so strong as to produce any irritation. The Inula helenium and Polygonum punctatum are valuable articles for fomenting with. I have often used sassafras with good effect. In most cases the fomentations are better prepared with vinegar, to which salt may be added with advantage. Instead of these warm applications, *cold water* may frequently, in the very *earliest* stage, be the means of bringing about resolution. I have found, also, that strong

Astringents, while they act as anodynes, exert a very powerful discutient influence. Thus with a simple decoction of white oak bark, made very strong and applied by wetting cloths, or a bran poultice, I have effected the resolution of very severe cases of inflammation.*

A most valuable article in recent injuries, both for the prevention and discussion of inflammation, is

The *Arnica Montana*, applied to the affected or threatened part, in the shape of a tincture of the flowers, more or less diluted. The application should be stronger when intended as a preventive, than after inflammation has begun: also, where the surface is sound, than where there has been abrasion. For a raw surface, I have usually added from twenty to sixty drops to a common tumbler full of cold water; while, on the sound skin, where there was little or no increase of sensibility, I merely dilute the saturated tincture with two or three times as much water. Perhaps the best rule for regulating the strength of the application is to have it just strong enough to occasion a slight smarting sensation.

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* This astringent treatment is effectual in veterinary as well as ordinary surgery. At least I know it to be so with respect to horses; and as every medical practitioner, wherever living, should keep a horse, he ought to learn the readiest means of relieving that noble animal, under the many injuries to which he is liable. I once saw a fine horse that had been kicked in the stable till his hind legs, the whole surface on both sides, from feet to hips, were completely mangled, and so swollen and inflamed that the poor *patient* was unable to bend the joints, but stood there fairly shaking and groaning with pain. A strong *warm* decoction of white oak bark was industriously applied by two persons, by means of wet cloths, renewed for two hours in succession. The swelling rapidly disappearing, the applications were discontinued; and in less than six hours the *convalescent* was able, on being turned into the pasture, to move about without limping, and the next day was fit for service. In numerous other instances that have fallen under my notice, similar treatment has been followed with the same success.

Among our Homœopathic friends—who use the article as an internal remedy also, and to whom, or rather to Hahneman, we are indebted for a knowledge of its efficacy as a local means—there is a great difference of opinion as to the degree of "dilution" which this article should undergo for external use. While many use it much weaker, others apply it still stronger than I have advised. One learned Homœopathic practitioner of this city informs me that he is in the habit of applying to external parts the pure tincture, with merely an equal amount of water, rarely diluting it more than three-fourths; and that he has seen by far the best effects from these stronger applications. He is guided, however, by the sensibility of the part, according to the rule above given. I am strongly inclined to the opinion that many of his brethren fail of deriving the full benefit of the article in their *external* use of it, from relying on too *high* dilutions. Be that as it may, my own experience with the article warrants me in saying, that it produces its preventive or curative effects in inflammation more promptly and effectually than any other article or measure in ordinary use.

As an illustration, I will state the case of a lady, who was, a short time since, thrown down in the street, and run over by a heavy wagon, the wheel passing obliquely across her body. When called to visit her soon after the accident occurred, I found her incapable of turning herself in bed, and suffering very greatly. Though, on examination, I discovered no fracture, there were tumefactions and ecchymosis, marking the whole course of the wheel; and the patient complained much of "inward soreness." I merely applied the tincture of arnica, diluted with two parts of water, to the contused surface, giving her no internal remedy. The next morning she was well, every trace of ecchymosis and swelling having disappeared.

Under ordinary *successful* treatment, I should have expected some discoloration and soreness to have continued for at least two or three days.

The *Hypericum perforatum* (St. John's wort), a plant growing abundantly in this country, may be used in the same manner as the arnica, and with results so similar, that those who have tried both, apply them indiscriminately, and consider the one a perfect substitute for the other. I am also informed that

The *Cynoglossum officinale* (Hound's tongue), will have the same effect, its tincture being a substitute for that of either of the other articles mentioned. The cynoglossum I know to be an excellent application to recent contusions or inflammations, in the form of a *poultice.*

Counter-irritation, when the inflammation is deep seated, or internal, should never be neglected. The principal measures of this kind are sinapisms, strong stimulating lotions, cupping and scarifying. [See previous part of this Lecture, and *Introduction.*]

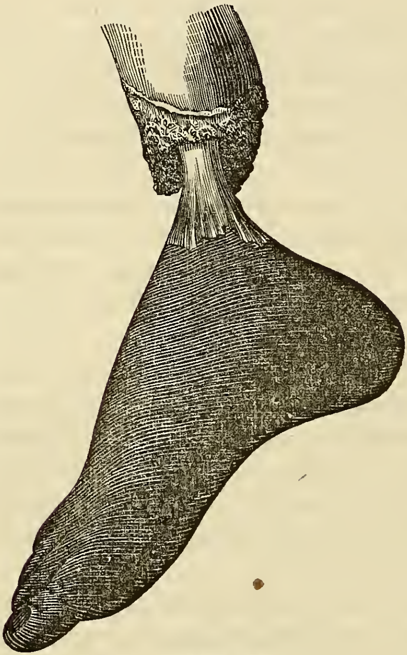
The cold affusion, or *douche,* as it is now called, has sometimes proved successful; but in extensive inflammation *cold* can only be applied to the part with the greatest caution. If suddenly applied and removed, the reaction may increase the heat and excitement; and if long continued, it proves too depressing. In consequence of not successfully bringing about resolution, it may occasion gangrene.

If, however, the case is too far gone to yield to discutient means, your next aim should be to *promote suppuration* as speedily as possible. You must then have recourse to emollient and anodyne applications. Of *poultices* the Ulmus fulva makes the best, for reasons that I shall have frequent occasion to point out. Flaxseed is the next best, but not near so convenient. The "bread and milk poultice" usually prescribed, is of but little use. It is every way inferior to the slippery elm, which may also, in some cases, be advantageously moistened with milk, or rendered anodyne by an infusion of opium. The latter article, however, can not always be safely used; for while opiates lessen morbid sensibility, they often retard, without preventing, suppuration. A safer and better soothing application is an infusion of lobelia; or the pulverized herb itself can be mixed up with the elm bark and applied together. The

Althea officinalis, with milk, forms an excellent emollient, in much repute as a preventive of

Gangrene.—The plant just mentioned is, in many parts of the country, called "Mortification Root," from its well known efficacy in domestic practice. Yeast and charcoal, the great resource in these cases, are best applied in connection with a small portion of Ulmus fulva and common salt. The application should be frequently changed. Pyroligneous acid is also an excellent application. It can be used alone or in connection with the salt and charcoal. Although stimulating as well as antiseptic, this acid is not at all too much so—just enough for the condition of the parts. In one case (taken by his friends from the Commercial Hospital, of this city) where nearly the whole surface of the abdomen was in a gangrenous state, produced by the application of a blister followed by tartar emetic ointment for eight or ten days, by the application of the elm poultice, wet with pure pyroligneous acid, the gangrene was arrested in a few hours, the line of demarkation was completely formed, and sloughing commenced.

Fig. 1.



Gangrene.

If *mortification* has actually occurred, measures must be taken to arrest its further progress. All the articles mentioned as preventives will be available. Professor Newton speaks highly of the use of the sulphate of zinc as efficacious, prompt, and unattended with any danger to the patient.

Chronic Inflammation

Generally requires more *stimulating* local measures. The most important instances will be treated of under appropriate heads, according to their peculiar character, or to the particular part of the body affected. Whenever suppuration occurs, and the part does not seem likely to open spontaneously, it should be punctured, as in other cases of *abscess*. When the inflammation terminates in ulceration, the treatment must vary, according to many considerations, which I will take up in another lecture, after describing the various kinds of *ulcers*.

LECTURE V.

THE DIFFERENT KINDS OF WOUNDS, ERYSIPELAS, TETANUS, AND HYDROPHOBIA.

DEFINITIONS—Simple, etc.—Cuts, Bruises, etc.—Their respective importance, pain, bleeding and danger—TREATMENT—Incised Wounds and Hæmorrhage—Compression, Styptics and Ligatures—Punctured and Penetrating Wounds—Suppuration—Lacerated and Contused—Irritation, Gangrene, etc.—Stimulants and antiseptics—Gun-shot Wounds—Their varieties and peculiarities—Probing etc.—Poisoned Wounds—Wasps, Snakes, etc.—Remedies, general and topical—TETANUS—Successful and "experimental treatment"—List of "hopeless measures"—ERYSIPELAS—HYDROPHOBIA, preventive and *curative* measures.

WHAT may be termed artificial maladies—derangements, chiefly local, produced directly by external agents—constitute the special and characteristic province of the surgeon. Men's more frequent indulgence, in former times, of their "organ of destructiveness" on each others' bodies, give rise to a separate art of surgery. The German name for its practitioner is still "wound-doctor"—*Wundartz.* The reaction, however, of the organism against injurious influences of all kinds, is of more importance than the peculiar nature of those influences—the study of *cure*, than that of cause. Hence, Surgery has become a branch of medicine; and while there are general diseases called surgical, the local derangements that are external and make a breach in the bodily substance, have been spoken of by some surgical writers as *wounds*, though not *occasioned* directly by outward mechanical force. In this sense an ulcer will be a species of wound!

A WOUND is defined, as a recent solution of the continuity of the animal structure, always *accompanied* with more or less violence done to the vitality of the parts.

Still the formal classification of wounds now to be considered, depends on the nature of their external causes.

The most general DIVISION is into simple and complicated.

The *simple wound* is a mere division of a particular part under the necessary conditions for healthy restoration. Any departure from this definition, either as to extent of injury or amount of vital reaction, constitutes a *complicated wound.*

Five or six *classes* of wounds require separate consideration: the incised; the punctured and penetrating (distinguished by their depth); the contused and lacerated (often connected); those occasioned in any way by explosion of gun-powder, and called for convenience "gun-shot wounds;" and lastly, those that, besides the mechanical injury, are the means of introducing into the body some poisonous substance.

1. An *Incised* Wound is, in plainer English, "a cut"—more precisely defined as a "solution of continuity by a sharp cutting instrument." "A *simple* incised wound" is further distinguished as made "by a *clean*, sharp cutting instrument," and in a *healthy* individual. A scrofulous or syphilitic taint makes it *complicated*, no less than a bruising in addition to the cutting. A simple incised wound is always one that heals, or might heal, by the first intention: whatever prevents it, is a complication.

2. A *Punctured* or *Penetrating* Wound is one made by a sharp pointed instrument, thrust to a greater or less extent below the surface. A needle "punctures," a bayonet "penetrates"—perhaps into the great cavities, on which circumstance the distinction is by some, made to depend. These wounds are not apt to heal by the first intention; hence more or less suppuration.

3. A *Contused* Wound is inflicted by some *blunt* instrument, that injures the parts below without any breach of the surface.

4. A *Lacerated* Wound, on the other hand, is generally occasioned by a rough as well as blunt instrument, *tearing* the integuments.

5. *Gun-shot* Wounds require no definition, except to repeat that they are made to include all injuries occasioned by the explosive *force* of gun-powder. Scorching by powder belongs,

of course, to the subject of "burns." Stones and other substances thrown by explosion, often strike with the force of balls; and balls often kill when it is very difficult to know whether they have struck or not. The cases called by the old surgeons "wind contusions," are no longer spoken of, under that name; and most modern writers seem disposed to question the whole subject of "windage"—without, however, bringing forward any hypothesis more tenable. I can not, myself, see any sufficient reason for doubting that the violent concussion of the atmosphere, by the passage of a ball, may inflict severe injury. The stratum of air impelled before the ball, or contained between the ball and the skin, is doubtless sufficiently condensed to impart a decided impulse to the surface that is grazed.

The subject of *cannon* balls, you will find more curious than practically important, unless you intend becoming surgeons in the navy or army.

The *rifle* or *pistol* balls, with which you are more likely to be concerned, generally make at once a punctured and a lacerated wound; and require particular attentions, which I shall point out, when speaking of treatment.

6. *Poisoned* Wounds are inflicted by some instrument that inserts a virus into the wound it makes. The bite of a rabid dog, some kinds of serpents or other reptiles, and the stings of various insects, are familiar examples. Commonly the wound itself is trifling; the poisoning of it makes all its importance.

The first striking circumstance attending most wounds is the *flow* of BLOOD. This, when not externally visible, is called simply "extravasation;" and is then often more dangerous than "the bleeding,' so alarming to patient and friends. The amount of hæmorrhage is no criterion of the importance of the wound, unless it is so great as to endanger life by its mere loss. It depends not only on the size and situation of the wound, but on its nature or mode of infliction, and sometimes on the constitution of the patient. A liability to profuse bleeding on slight injuries, constitutes the "hæmorrhagic diathesis."* Gunshot wounds often bleed but little; and the severest *contusions*, if merely such, none at all.

The PAIN is another circumstance that frequently deceives. It bears, in many cases, no relation to the danger, unless that of *inverse* proportion. It is only in the extreme degree, threatening tetanus, that it becomes itself a consideration of vital importance. Nature generally ceases her *alarm* of pain, where the injury is already irretrievable. The general rule is, that parts well supplied with nerves, are the most susceptible to painful irritation. The skin is a vast net-work of nerves, while many vital parts are nearly insensible in their normal condition. In amputation, it is the superficial cutting that hurts most. The back is much less sensitive than the front of the body, the feet than the hands. Wounds in the knee occasion little suffering in proportion to their danger.

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*See remarkable case under Ligating Carotid Artery, Part II.

The DANGER of wounds depends on many circumstances, besides the obvious ones of depth, direction, etc.; among which, those of the patient's constitution and habits must never be overlooked. With the same kind of wound in the same part, you must be careful not to give, as a matter of course, the same prognosis. Some persons have a "cancerous diathesis," and their slightest injuries require great caution and attention.

AGE, also, makes a difference. *Young* persons suffer more, when wounded, from the first shock and reaction, than the *old;* but their danger is much less, and they recover more quickly.

TREATMENT OF WOUNDS.

It is especially in connection with the first class of wounds, *the incised*, that the subject of *hæmorrhage* requires our consideration. The first thing that arrests the surgeon's attention and excites the alarm of the patient and spectators, is *the bleeding.* This should be stopped as soon as possible. We have three means for effecting this object—compression, styptics, and the ligature.

If no large arteries or veins have been cut, a lint compress and bandage will be sufficient. If this fails, styptics may be used, such as pulverized galls, lint steeped in the tincture of the same article, or in a solution of alum, or strong decoction of white oak bark, or (what is better than either of these articles) I would recommend you to scrape off and use the fleshy side of a piece of spongy oak-tanned sole-leather. This presents a very soft unirritating surface, while it is strongly astringent, and may be strengthened in that respect, by wetting in any styptic liquid. It may be pressed firmly into the wound so as to give the additional advantage of compression. If these means fail, or are not considered sufficient, recourse must be had to the ligature.

When an artery has to be tied, it should be done at the wound, if it can be reached by the forceps. When the end of the vessel has too far contracted, the arterial needle may be used, and a portion of the surrounding parts included in the ligature. If this measure does not answer the purpose, the wound will have to be dilated, or an incision must be made at some other point. Dilation should, if possible, be avoided. It is frequently attended with serious consequences; and is altogether unnecessary in a simple incised wound.

Dangerous hæmorrhage from any large arteries must, of course be first guarded against by the tourniquet, or some other mode of applying pressure. If the bleeding is from the lower extremity, compress the femoral artery just below Poupart's ligament; if from the upper, restrain the brachial artery in like manner, somewhere above the middle of the arm, if the wound be below this point.

There is some *choice in ligatures.* The best is made of animal membrane. Whatever substance is used, it should not be so thin as to cut through the coats of the arteries, on being tightened. If silk or linen is used, one end should be left hanging out of the wound, the other cut off close to the knot. Learn to tie the "surgeon's knot"—one that won't slip. When ligatures of animal fiber are used, both ends may be cut off close and the wound allowed to heal by the first intention; the ligature being absorbed after having done its office.

In *taking up arteries*, great care must be exerted, never to tie up a *nerve* with them. Important nerves frequently accompany arteries, and are found in the same sheath. In such cases they must be carefully separated. Neuritis, neuralgia, or fatal tetanus, may be the consequence of neglecting this precaution.

After having secured the arteries and suppressed hæmorrhage, bring the parietes of the wound together, and secure them as nearly as possible in their original position by adhesive strips, collodion, or suture. Avoid sutures if possible. When they must be used, have very few—two or three may often suffice in the largest wounds—relying on the other means in the intermediate spaces; though in some cases a larger number will be required.

After these things have been attended to, nothing more is necessary than simple dressing, such as will shield the wound from the action of the atmosphere. A cloth wet in cold water and covered with a slippery elm poultice will be a complete protection. If there is a great tendency to inflammation, warm poultices may be preferable, with such other means as are directed for allaying inflammation.

If the patient has suffered much from the loss of blood, it may be necessary to keep up his strength by stimulants and tonics. He should have a nourishing diet; food highly spiced or seasoned to be, of course, avoided under all circumstances.

Punctured Wounds, when slight do not commonly give the patient much inconvenience. This depends very much, however, on their situation and the constitution of the patient. The prick of a needle may bring on tetanus. Any puncture through tendons, nerves or fasciæ, may produce excessive pain and distress. Matter may infiltrate into the cellular tissue and occasion extensive inflammation. Swelling of the lymphatics is a frequent consequence of punctured wounds. When the injury is in the foot, for instance, we may have buboes; or swelling of the sub-maxillary glands, from a punctured finger. In such cases a red line may nearly always be traced from the point of injury along the course of the lymphatics to the glands.

A variety of punctured wounds has been distinguished, as the *penetrating*, the generic term being restricted to shallow punctures. Penetrating wounds, then, are such as enter the great cavities. Their diagnosis and prognosis are very doubtful, (as will be seen when we come to treat of particular wounds). A large instrument may pierce the cavities of the vital organs, and the patient recover; a very slight entrance in another direction may cause death. The result depends not only on the extent and position of the wound, but on the constitution and habits of the individual.

In treating these wounds, as all others, the bleeding, if any, must be first attended to. Next, the extraction of any foreign matter that may have been thrust and left in. When any is suspected, you must ascertain by probing. The finger is the best instrument, when the wound is large enough, and not too deep. If there be any poisonous substance introduced by the instrument or otherwise, such fluids should be injected as will, if possible, neutralize it, and cleanse out the wound.

The *lips* of these wounds should be kept *apart*, as there is always a liability to their uniting while suppuration is going on actively within. If the matter is not allowed a free exit, it will spread and aggravate the injury. There is always considerable danger of inflammation from this source. Hence, a tent should be kept in the external orifice, and often removed; and emollient poultices should be applied over the wound, with warm or cold applications, as the case may require.

If the parts are so lacerated as to produce any insensibility, or a partial loss of vitality, it may be necessary to use stimulants, such as brandy and warm water; but as a general rule, cool emollient poultices are all-sufficient.

As the *pus* that accumulates should be allowed to escape as quickly as possible, it is proper to renew your dressings two or three times a day, pressing gently on the part, but not so as to give pain. Never allow the outside to heal before the interior.

Lacerated wounds differ from incised, in being generally unaccompanied with hæmorrhage. Large arteries may be ruptured without bleeding. The only danger in this respect is that of "secondary hæmorrhage."

The *constitutional effects* are often very great. Chills, spasms, and tetanus, frequently occur. There is great liability, also, to erysipelatous inflammation.

Diagnosis is not difficult, the condition of the injury being generally very apparent.

Prognosis is more questionable, depending much on the habits and constitution of the patient. On this account the practitioner should be guarded in his opinion.

There is often great injury done to parts not directly involved in the laceration, and much foreign matter adhering to the wound.

Supposing, then, that there is no hæmorrhage, the first thing to be attended to, is the removal of all foreign substances. But be very careful about too much handling. After *clearing* and *cleansing*, bring the torn parts as nearly together as possible, and *fix* them either by adhesive straps, bandages or sutures. It is better, however, to let the wound gape considerable than to cause much irritation by sutures. These wounds must heal by granulation, and therefore, it is not so important that the parts be in perfect apposition.

If there is, as there probably will be in all extensive injuries of this kind, a great deal of *irritability*, apply an emollient poultice—(the common slippery elm, wet in some anodyne preparation). I have found the expressed juice of lobelia one of the safest and most certain means of allaying irritability and other unfavorable constitutional symptoms. A poultice of poppy leaves, with a little ulmus fulva, is very useful, or this may be wet with lobelia juice. The Sudorific Tincture, (Form. No. 5), may be used with lint or cotton. A dilute tincture of Arnica may be used (with or without the Ulmus) with great advantage. The Hypericum perforatum (St. John' Wort) will make a very satisfactory substitute for the Arnica.

A general antiphlogistic course should be pursued. By this, however, I do not mean what is generally understood by it in the books; I do not mean to enjoin bleeding, blistering, antimonials, etc., etc. I mean simply a course of mild diaphoretics, hydragogue cathartics of a cooling character (such as the comp. powder of Senna and Cream of Tartar) in doses sufficient to keep up pretty free purging. Cooling applications to the wound should be added, unless there is great insensibility; then stimulants should be applied. When there is a strong tendency to extensive inflammation, or when it has already taken place, bitter herb fomentations should be frequently resorted to, such as hops, elecampane, eupatorium perfoliatum, stramonium and lobelia. The ambrosia elatior (Roman wormwood), used as a fomentation, seems to exert a specific effect in allaying inflammation under such circumstances.

If there be reason to apprehend the approach of *gangrene*, make use of antiseptics. One of the best, if not the very best, in the Materia Medica, is *pyroligneous acid.* It may be applied in connection with the slippery elm poultice, or the hop fomentations. It may even be used undiluted. The Althea officinalis will also answer a good purpose; it combines very soothing emollient with powerful antiseptic properties. It should be used green; boiled in milk or milk and water, applied warm and frequently renewed. A strong decoction or infusion of Epiphagus Virginiana will often arrest the gangrenous tendency immediately. Yeast and charcoal are of great value, especially in combination with salt. A very good reliance of some of our practitioners against sloughing and mortification is, a poultice made of the root of wild cherry, sassafras and sumach. Comfrey (Symphitum officinale) has also been highly recommended.

I will take this occasion to mention an application which may be considered indelicate, and may have been of very vulgar origin. I hold that it is our right and duty to resort to any and every means that may be useful to relieve human suffering; and, at the risk of ridicule, I will state that I have seen the happiest results follow the application of a poultice of fine soft wheat bran, wet with human urine. It should be applied as warm as it can be borne, and frequently changed. I really believe it a superior article, not only for the prevention of mortification in wounds, but in other inflammations, inflammation of the mammary glands, varicose ulcers, etc. You may never use this, but I mention it because it is my duty to point out every variety of resource, especially those that may be available when others are not to be procured.

[Frequently the edges of wounds become inflamed swollen and painful, and the process of reunion is retarded. If they are now penciled with Tincture of Muriate of Iron, these unpleasant symptoms will rapidly disappear.

When a wound is sloughy, the vitality of the adjacent tissues being impaired, and the pus offensive, no better application can be made than a solution of Permanganate of Potash, ʒj. to water Oj. It removes the feter, checks sloughing, and improves the condition of the part in every respect].

If during the treatment any fungus should appear, it may be kept down by the mild caustic, or pulverized sanguinaria. If neither of these should seem strong enough, use caustic potash.

Before leaving this subject, I wish to impress upon your minds one important point not to be lost sight of—the necessity of guarding against *secondary hæmorrhage.* Although the wound may be at considerable distance from any large arteries, and there may have been very little bleeding in the first instance, yet we never know to what extent the injury may have gone. Deep seated arteries may inflame, sloughs take place, and dangerous hæmorrhage set in, weeks after the original injury.

CONTUSED WOUNDS.—These wounds are more tedious than any other. In many cases, there is great suffering, though but little injury. There may, on the other hand, be no pain at all when the case is serious; in fact, the more extensive and severe the contusion, the less the pain. The danger is of extensive inflammation, with mortification, sloughing, hectic fever, etc.

The great aim in *treatment* is to prevent those results by emollients, etc. Generally, however, *stimulants* are indicated, especially when the injury is extensive and pain slight. The patient should be sustained by a nourishing diet and tonics.

If there be extensive *extravasation* of blood, forming a tumor, it may be let out by *puncture.* This, however, if done at all, should either be done early, or after the subsidence of inflammation. If neglected till severe inflammation has set in, your new punctured wound will do more harm than the blood. It will occasion the occurrence of gangrene; or it may itself be the cause of tetanus.

In all other respects the treatment for contused, is the same as directed for lacerated wounds. A most valuable remedy however, more particularly applicable to this class, is the tincture of Arnica, or Hypericum, diluted and applied as directed under inflammation. (See page 71).

Gun Shot Wounds.—The orifice of these wounds is no guide to the *course* of the *ball.* For example: a bullet may strike the middle of the forehead, and emerge from the occiput just as if it had passed through the center of the brain, yet the patient be almost uninjured, the ball having simply whirled round the skull under the integuments. I witnessed a still more remarkable case, where the ball seemed to enter the thorax near the sternum and fifth rib, and passed out behind at the junction of the spine and the rib, along which it had slid, doing no material damage. The direction of the shot does not even require bone to change it; cartilage, intermuscular ligament, and even fasciæ, have been found sufficient.

The orifice which the ball makes in entering, is always much smaller than that of its emergence. The latter has ragged, everted edges; and the parts contiguous to its course are always more or less contused or lacerated. When bones are broken, the fractures are generally comminuted. Injury done to nerves is apt to occasion tetanus, sometimes even after the wound has healed. Primary hæmorrhage is rare; the secondary more dangerous. *Diagnosis* and *prognosis* must therefore be regarded as difficult. I know an individual in Erie county, of this State, who had a rifle ball pass directly through the belly, from side to side, yet who scarcely endured a minute's suffering, and in three weeks was perfectly well. The ball entering just below the false ribs, must have passed along in front of the colon, so as to avoid both the intestines and any considerable bloodvessel. In other cases the smallest squirrel shot entering the abdomen will cause speedy death.

The *treatment* depends much of course on the site and direction of the wound. The union, it should be noticed, must always take place by *granulation.* In your examination use your finger as far as possible. It is the best of probes, causing less pain and injury than any other, and giving the most reliable information. Remove the ball, shot, clothes, or any other substance it may have introduced. If, however, the ball be so situated as to be got hold of with difficulty, and do not interfere with recovery, let it alone. Many persons carry shot in their flesh without any inconvenience. If it is near the surface and can not be removed via the wound, it is better to cut through to it than to dilate the original wound. After cleansing, proceed as with the punctured wound. I may here mention an accident that occasionally occurs in this class of wounds. A nerve of considerable size may be enclosed in the cicatrix, and give rise to neuralgic or tetanic affections. In such an event, the cicatrix must be excised and a new one allowed to form.

Poisoned Wounds.

Of these the most familiar are the bites and stings of insects and reptiles.

The sting of a *wasp* or *bee*, though very painful, is generally attended with no serious consequence. Yet in some individuals it occasionally produces alarming, and even fatal results. I have for some years past been in the habit of making one and only one prescription. If this prove as successful in other hands as it has in mine, no one need ever suffer more than a few minutes. Cut in two a *raw onion*, and apply a section to the part affected. It has in every case relieved the pain, and in most, prevented or reduced the inflammation. I recollect applying this simple remedy, in one case, where the nose had been stung three days before. The countenance was completely disfigured by the swelling; eyes closed, and lips and tongue so much involved, that the individual could not articulate. There was violent sympathetic fever, with pain in the head, amounting almost to delirium. All these severe symptoms subsided in a few hours, and the tumefaction went down in the course of twenty-four. In fact, the pain was relieved in a few moments. The onion is to be changed every fifteen or twenty minutes.

Inasmuch as this convenient application has proved a specific in so many cases, I have not found it necessary to try other means. Aqua ammoniæ, common salt and plantain leaf (Plantago major), have been recommended. Cupping and scarifying is also enjoined; I have not found it necessary.

I will mention the poison of the *scorpion*, on account of the very simple *remedy* which, we are informed, both prevents and cures. The common people in Italy, who are much exposed, rely with perfect confidence on the application of a little olive oil, from a bottle they carry about with them, and in which a scorpion is kept. On the coast of Barbary, where many persons go nearly naked, and sleep in the open air on the sand, they are in the habit of anointing the whole body with such a preparation of *scorpio;* after which the live ones run over them without stinging. Of the immunity enjoyed through this article, I have been assured by eye witnesses. The olive oil succeeds, of course, just as well without any scorpion in it; and has been successfully used in this country against snake bites, and probably is also a preventive and cure of musketo bites.

The only dangerously poisonous reptiles we have in this country, are the moccasin, copperhead, and rattle *snakes*. The effects of their bite are so much alike as not to require separate notice.

The person bitten is seldom at a loss about the cause of his sufferings. He feels a smarting pain at the wound, extending up the limb, which swells, and in the case of the rattle snake, turns spotted. Nausea soon comes on, with dizziness in the head. The swelling continues, extending to the other limbs, and sometimes over the whole body. I have seen such a case where the tension was so great, that the skin burst open in several places. The patient often becomes delirious.

A course of *treatment* which has proved successful in all cases where I have known it to be tried, is to make the patient drink freely of a strong decoction, in milk, of common plantain and horehound, and apply a poultice of the same articles to the wound. Speedy and permanent relief follows. It is best, however, to continue the prescription, in smaller quantities, for several days, when a complete cure may be relied on. My friend, Professor Baldridge, informs me that he has succeeded by this means, in a great number of cases, with brute as well as human patients. We have other testimony to the same effect. The *Uvularia grandiflora*, prepared in the same way, is said to be equally efficacious. The successful administration of sweet oil was mentioned when speaking of the scorpion. An unfortunately more accessible and popular remedy in many parts of this western country is *whisky*, applied externally and internally, *ad libitum*, or in quantities unlimited and almost incredible. Of the success attending this course, I have been assured, by many professional as well as non-medical persons. A member of the present class informed me that he gave a very small child half a gallon, without producing intoxication; it soon relieved the patient, leaving no bad effect. Of course this cerebral insensibility to the article is an indispensable *condition* for its prescription; and people may not be made dead drunk for *fear* of being poisoned.

RABIES CANINA.

By far the most serious species of poisoned wound is the bite of the rabid dog.

The first object of treatment, is of course to *prevent* the development of *hydrophobia*. For this purpose, the earliest possible attention and most scrupulous measures are required. The limb, which is almost always the part bitten, should be corded above the wound, so as completely to cut off the returning circulation. The next thing is, by all possible means, to remove the virus deposited. The wound must be scarified, or portions of it cut out, and then placed under cups to draw off all the blood. Some direct it to be placed under the exhausted receiver of an air-pump. By whatever means, the *suction* must be kept up for an hour or more—as long as the patient can bear it. Every part that has come in contact with the teeth, should be washed off with aqua ammoniæ, and then cauterized with potassa fusa. After this apply a warm slippery elm poultice, to bring on suppuration as soon as possible. The patient should, as soon as these precautions are taken, have an emetic, followed by an active and powerful hydragogue cathartic. This medication should be repeated once a week, or oftener, if the patient manifest any disagreeable constitutional symptoms. Give him all the while a strong infusion of the Scutellaria lateriflora and black ash bark (Fraxicus sambucifolia), from a pint to a quart every day. For several months after the first, the emeto catharsis should be repeated at longer intervals; your patient must never be allowed to get costive. The infusion must be continued for at least three or four months—six or eight months would be better, allowing the quantity to be gradually lessened. A purulent discharge from the wound is to be kept up during the whole period of treatment—say six months at least—by re-application of the caustic, whenever necessary.

About the thirteenth or fifteenth day, there usually appear, under the patient's tongue, several small pustules, containing a yellowish watery fluid. These should be punctured as soon as discovered, and the mouth washed out with some alkaline solution. This is the period when the first paroxysm is apt to occur, and the pustules are regarded as among the marked premonitory symptoms. Their appearance or importance has been doubted by some. They have been distinctly observed by several physicians of my acquaintance, as well as by myself in several instances.

These measures have prevented the development of the disease in every case where they have been resorted to. In some of the instances, other persons or animals bitten by the same dog, have died in paroxysms of

HYDROPHOBIA.

Some of the terrible symptoms of this disease are, from their peculiarity, well known to everybody, though witnessed by few. The horror of liquids, which occasions the name, arises probably from spasm of the throat, which is often the cause of death, by cutting off *air* as well as *water*. Other parts of the muscular system are similarly affected. The senses and intellect are for a long time unimpaired, which only adds to the horror of the sufferer's condition. Utterly unable to sleep, he abandons himself to despair, from which he is only relieved at last by delirium or death. When the wound has been allowed to heal, the cicatrix ulcerates again as the constitutional symptoms develop themselves—the first symptom of the approach of the paroxysm being itching and pain in the cicatrix.

Should any of you ever be where a case occurs, do not let your presence add to the terror and despair. I do not teach you, in the words of a distinguished Philadelphia professor, that "Hydrophobia may still be considered an incurable disease."* My advice, then, is, if you get hold of a patient in a paroxysm of hydrophobia, to put him immediately under the influence of the compound tincture of Lobelia (F. No. 6), even to the prostrating extent, once well known as "the alarming symptoms." Apply derivatives to the feet and legs, and strong stimulating counter-irritants all along the spine. Get up and keep up a free discharge from the original wound; although it may have been healed for years; cauterize and poultice it. Keep up also profuse perspiration from the general surface, by the alcoholic vapor bath, or other powerful means. An active cathartic should be also given. The patient should be, to a greater or less extent, under the influence of the lobelia, for at least twenty-four hours. Watch him closely, and increase the quantity as at first, if there is any sign of relapse.

As soon as the effects of the paroxysm have passed off, commence with the preparation mentioned as a preventive. Be sure to keep the bowels regular, and the skin active, by frequent washings and frictions. As an additional means, tonics may be used, such as our restorative bitters (For. No. 7), or a strong syrup of Leonurus cardiaca.

Several well marked cases, which had been pronounced hopeless by the old school, have recovered under treatment like that I have recommended; and none so treated, ever to my knowledge, had an unfavorable result. One remarkable case that occurred in this city is given in Howard's practice. The uniform success of this plan is strikingly contrasted with the admission of Watson, Gibson, and other distinguished old school authorities, that the disease is never cured by the resources of their art.

TRAUMATIC TETANUS.

It will be proper in this connection to speak of tetanus as connected with wounds. When the jaws only are affected it is called trismus.

The first *symptom* is a sensation of soreness and stiffness in the muscles of the neck and face. This rapidly increases; the forehead wrinkles; and the countenance assumes a ghastly appearance. Swallowing becomes difficult, and soon impossible. The jaws are locked fast, and the whole body is rigid. There is often a cold and clammy perspiration, accompanied in general with costiveness. The pain is extreme, but somewhat remittent. Though every muscle in his body seems in painful contraction, the patient still retains his consciousness. The pulse is at first strong and full, then small and rather feeble.

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* Gibson's Institutes of Surgery.

When called to such a case, your object must be to *palliate* prominent symptoms; your most effectual means are large and repeated doses of the compound tincture of Lobelia (For. No. 6). If the patient can not swallow, still pour it in his mouth, and let it run between the teeth. This will probably soon produce such a degree of relaxation as will permit him to swallow. If not, lose no time in giving the same article by the rectum, using a large syringe. The effect will be not only relaxation, but excessive muscular prostration, with nausea and vomiting. There is no danger, however, of non-recovery from the medicinal disease.

After the first relief thus obtained, continue to keep up *nausea* by repeated small doses of the same article, or of the acetous emetic (Form. No. 4), adding an additional portion of Ictodes fœtida and Cypripedium. Apply strong *stimulation* along the whole course of the spine, followed by mustard, so as to keep up permanent irritation. On removing the sinapism, re-apply some stimulus, so as to keep up irritation for a considerable time—twelve or twenty-four hours.

The *wound* should be early attended to, whether it may have been healed or not. Make use of caustic potash and emollient poultices for the purpose of exciting free suppuration.

The patient should be kept quiet for several days; and may need an anodyne occasionally. Lupulin will be a good article, or extract of hyosciamus—or cypripedium freely given.

[Tincture of Gelseminum in full doses has been employed with most marked advantage in cases of incipient tetanus; but when the disease has become fully established it fails to effect relief. Nicotina, the alkaloid obtained from tobacco, is probably the most powerful as well as successful remedy we have. Several cases are recorded in which it not only arrested the tetanic convulsion, but in which the patient recovered. It is used in doses of one drop repeated as often as necessary. It produces the same symptoms that follow the administration of tobacco, which has also been employed in this disease—prostration, feeling of deathly sickness, relaxation, pallor of the face, cold perspiration, etc.]

I am satisfied from my own experience in a number of cases, and the testimony of others, that the course of treatment here recommended to you, will succeed in the great majority of instances—notwithstanding the confessed hopelessness of ordinary practice. A sad summary and just estimate of that practice may be seen in the following extract, from a quite recent work. Under the head of "*Treatment*," in Hastings' Practice of Surgery,* we are informed that "this" (the treatment), "has been, as yet, but *experimental*—no form is settled on as rational and *hopeful practice*—remedial means, as comprehended. in the present day, seems to hold forth but a slender chance of success—therefore nothing more can be done than to give a *catalogue* of remedies that have been employed" [with little or no success!]. "The following means have been *constantly* tried, and it is said of each, *oocasionally* with success: amputation, division of the nerves, cupping the part, the incision being deep enough to cut off *all nervous communication* [!]—the actual cautery—cold bath—hot bath— *general bleeding*—active purgation—enormous doses of opium—tobacco enemata—large and repeated draughts of brandy—counter-irritation over the spine, with the *endermoid* [endermic?] use of morphia, aconite, belladonna, etc.—the external application of cold, stimuli being given internally at the same time, and *salivation by mercury*"[*!!*]

TRAUMATIC ERYSIPELAS

is another general subject I should notice in this place. It is a form of inflammation occurring at the margin of wounds, and tending to diffusion over a considerable space. It generally assumes a dark purple and unhealthy appearance and it is very irritable and painful. A sanious fluid exudes from it.

As this affection arises, manifestly, in most instances from a lack of vitality in the part, active *stimulants* seem plainly demanded. Effectual recuperative reaction is to be substituted for that which is languid and inefficient. I have in several instances immediately brought about the desired change by a simple application of the tincture of capsicum, or the saturated tincture of Phytolacca decandria (poke-root), or the compound tincture of myrrh. In other cases I have been obliged to resort to *caustic potash*, giving a slight touch of the pencil to each vesicle, which produced immediate disorganization of the morbid structure. On the application of an emollient poultice, the destroyed parts slough off, and the surface assumes the appearance of a healthy sore.

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*Published in Philadelphia, in 1850.

I consider the caustic potash, if cautionsly and properly applied, a sure remedy, and far preferable to the actual cautery, often resorted to and recommended, as it is much less irritating, and is, at the same time, more certain to prevent a return of the unhealthy action. As an additional security against relapse, the sore should be occasionally stimulated. The sesqui-carbonate of potash answers well for this purpose; it acts as a stimulus to healthy granulation, while it destroys all fungus and other feebly organized growths.

[Traumatic erysipelas should not be looked upon as exclusively a local disease, as it is dependent upon an altered condition of the blood, an evidence of imperfect vitality. Hence, we attach great importance to the general treatment. The condition of the stomach should be carefully attended to, especially if the wound is large, as it is essential that our remedies be properly appropriated, and that a sufficient amount of food for the sustenance of the body be digested. Tincture of Muriate of Iron with Quinine seems to correct the depraved condition of the blood better than most other remedies. The Sulphite of Soda may also be used, in doses of fifteen to twenty grains, every three hours, or the Permanganate of Potash in the proportion of ten grains to four ounces of water, a teaspoonful every three hours.

As a local application, either the tincture of Muriate of Iron, Per Sulphate of Iron, or Sulphite of Soda, will be found useful, the first being the remedy I employ most frequently. If suppuration occurs, and the parts become sloughy, I use a solution of Permanganate of Potash freely as a wash, and a yeast and charcoal poultice.]

PYÆMIA.

[This is the second or suppurative stage of phlebitis, in which pus being formed in the veins is carried into the circulation and induces the severe symptoms below named. The pathology of the disease is not definitely settled, much discrepancy of opinion having existed. Four theories are named as accounting for the phenomena. 1st, That it is owing to the admixture of the pus with blood, the pus-cells being larger than those of the red globules are arrested by the minute capillaries, and give rise to secondary abscess. 2d, That it depends upon the property of pus to coagulate the blood, which occurring occludes the capillaries of a part, and thus gives rise to abscess. 3d, That it is owing to some irritant body, which inducing capillary phlebitis, gives rise to the secondary suppuration. 4th, That it is caused by a peculiar poison which contaminates the system.

If we examine the cases of this disease closely, we find that in all there was unmistakable phlebitis, running or tending to the production of pus, and the inference is natural, that this is the cause of the mischief. That it does not affect the system, as in the first proposition, is proven by the fact that the white globules of the blood are as large as pus-cells, and can with difficulty be determined from them; and yet these readily pass the rounds of the circulation. That the second proposition is not a true explanation, is proven by the fact that pus does not coagulate the blood in living vessels, though it quickens it when drawn. In answer to the third, it is claimed and proven that normal pus is one of the most bland and innocuous of animal fluids, and by direct experiment that no such results follow its introduction into the bloodvessels. The fourth proposition is defensible from the fact that we know that animal matter undergoes changes which render it eminently poisonous, as exampled by variolus pus, the matter of glanders, certain septic changes in decomposing animal matter, which render it peculiarly dangerous, as malignant pustule, certain dissecting wounds, etc. We can not account for the production of this poisonous pus at one time and the bland innocuous fluid at another; neither can we always distinguish between them, any more than we can account for the production of small pox, or vaccine virus, or distinguish between them.

Symptoms.—Though pyæmia may result from the phlebitis, as heretofore described, yet in a majority of cases the severe symptoms are manifested at the commencement. The forming stage is generally very short, usually not more than twenty-four hours, during which the patient feels languid, and if from an injury or operation, complains of severe pain in the part. A violent chill or rigor now occurs, lasting from fifteen minutes to one or two hours, succeeded by violent reaction, and this by profuse perspiration. The rigor happens sometimes several times a day, at others but once, and occasionally none after the first one.

The symptoms are always severe when the disease is once established; the pulse is small, frequent and feeble; the mouth clammy, and the tongue covered with a dirty, brownish coat; the stomach is irritable, and nausea with vomiting occurs from slight causes; the bowels are irregular, the evacuations being dark and very offensive; the urine is high-colored, scanty and fœtid; the extremities are cool; the trunk hot and pungent; the mind wanders, and the patient has little command over the voluntary muscles; there is tenderness of the entire body, and sometimes excruciating pains in internal organs and joints. These symptoms increase day by day, bearing a marked analogy to the severest cases of typhoid fever.

Sooner or later in the disease the poison seems to localize itself by lighting up an inflammation of the lungs or other viscera, of the joints, and of various soft parts. These inflammations run a rapid course, and always terminate in suppuration, sometimes several parts being affected at the same time, or innumerable small abscesses form in various parts of the body.

Diagnosis.—The symptoms above named are sufficient to establish the diagnosis. The only disease with which it could be confounded would be intermittent or remittent fever, on account of its marked periodicity; but under no circumstances need this be the case if we reflect that these diseases never present such aggravated symptoms.

Prognosis.—The prognosis is very unfavorable, though some few will recover; the duration of the disease is from four to twelve days, usually terminating fatally within the first week.

Treatment.—To remove the exciting cause, prevent decomposition of the blood, and support the system, are the obvious indications. The first may be accomplished in some degree, by giving a free exit to purulent accumulations; and in this, as in cases of absorption from an open suppurating surface, the use of means to change the condition of the parts, destroy the elements of decomposition, and favor normal pus formation. For this absolute cleanliness is imperative, and the use of a lotion of Chlorinated Soda or solution of Sulphate of Zinc. If an external phlebitis exists, penciling the part with the Muriated Tincture of Iron is beneficial.

No means are so important in preventing rapid changes in the blood, as those that check these violent disturbances of the circulation. For this purpose, ten grains of Quinia with an ounce of Brandy at the commencement of the intermission, and repeated if necessary, is the most efficient means. A solution of the Chlorate of Potash with Hydrochlorate of Ammonia taken freely, with the internal administration of the Tincture of Muriate of Iron in doses of twenty or thirty drops every three or four hours will complete the treatment in many cases. If there is much pain so that the patient is rendered uneasy, and can not obtain rest, I should have no hesitation in giving full doses of Opium.

Irritation of the stomach must be especially guarded against; if severe at first, and accompanied with retchings and vomiting, a thorough emetic is advisable; if not so severe, it may be arrested by sinapisms to the epigastrium, and the use of an infusion of Peach bark. Animal broths and milk should be administered as freely as the stomach will bear them, and stimulants employed as may be necessary. The frequent use of the bath, alkaline to the trunk, stimulant to the extremities if there is coldness, is a very useful adjuvant to the treatment.

If evidence of local determination to internal organs should arise, dry cupping should be resorted to, and followed by stimulant applications; in some cases a blister would answer a good purpose. In addition, it is highly essential that normal circulation to the extremities and surface should be obtained if possible. If the joints are affected, they should be painted with the Tincture of Muriate of Iron, and poulticed with the decoction of Cornus and Wheat bran before named; the same treatment is applicable to other external parts. When pus forms, it is good practice to give it exit by a free incision at the most depending portion, and promote free drainage.]

Hospital Gangrene.

[Among the enemies of life and limb that the wounded soldier has to encounter, there is none that assumes a more prominent position than hospital gangrene. Its victims have been counted by thousands, and in those who have recovered, the recollection of the weary weeks and months spent in the hospital will always bring a shudder. In many of the army hospitals, it has been treated with marked success, but in others, the treatment has been a failure.

In regard to the pathology of the disease, it is now well established that it is strictly local, though many still believe that it is dependent in great part upon constitutional dyscrasia. Dr. John Packard, in a very interesting article, in the Journal of Medical Science, remarks:

"It may exist for days, and destroy tissue to a wide extent, without affecting the constitutional condition to any appreciable degree. But this is only the case in men previously robust; generally there is more or less irritative fever, according as the system is more or less readily impressible. One wound may be rapidly spreading and highly offensive while another in the same limb is healing kindly. Nay, of the same wound, one portion may be granulating and filling up, while the remainder of it is sloughing."

The symptoms of hospital gangrene is thus graphically described by the same writer:

"Any open wound may at any time assume this character. A suppurating surface communicating with the atmosphere seems to be requisite. I have never yet seen an abscess which at the moment of its being opened was the seat of this form of gangrene; nor has it ever occurred to me to see a wholly healed wound break out again with it. Usually, the exposure to the air has been of some duration.

"Wounds which have healed to a mere point, may in a few days, spread to several times their original extent. This is most strikingly seen in superficial shell-wounds; in one case of this kind, almost the whole outer half of the thigh was thus converted into a ghastly and most offensive ulcer.

"When the wound which begins to slough is somewhat wide and shallow, the skin seems to melt away or cave in, as it were, at the edges of the chasm; the epidermis around the margin becoming of a dead, pearly white, while the skin below and just outside shows a faint pinkish blush. Another condition is apt to exist in deeper wounds, and especially in sinuses, the connective tissue sloughing so as to undermine the skin, which may or may not look inflamed and unsound.

"A grayish-yellow, pultaceous and horribly offensive material fills up these sores, and flows away like a thick, purulent discharge. Microscopically examined, however, it exhibits none of the characters of 'laudable' pus; consisting merely of the degenerated connective tissue of the part, with broken-down pus-corpuscles and myriads of minute oil-drops. A few fine fibers, tangled and contorted, are seen, and sometimes here and there a pus-corpuscle less degenerated than the rest."

As regards the treatment, many different plans have been adopted. The free application of nitric acid seems to have had the preference in the West. Bromine has been used to a considerable extent, and was highly lauded. Dr. Packard objects to this treatment, and advises the following plan, which if attended with the success that he claims for it is certainly far preferable:

"There are two indications always present in cases of the kind. First, all the putrid and putrescent matter must be removed from the wound. Secondly, means must be taken to prevent the recurrence of the sphacelation or necrosis, into which the tissues will surely run if not checked.

"To fulfil the first indication, the forceps are sometimes all that is needed. My own custom is to seize a portion of the gangrenous connective tissue, and then twist and roll it up, with traction, until it comes away as far as possible, without too great force. Sometimes it will either break or come away; but if it still resists, it must be cut away with a pair of scissors (a bent or curved pair will usually answer best), or with a knife. This must be repeated again and again, until all the tenacious putrilage has been removed. Rough sponging will still further cleanse the surface.

"Chloroform or ether should be used in all cases where there is much pain or tenderness in the sore, or when the wound passes deeply through a thick fleshy part, or is undermined at its edges. *The whole surface of the wound should be thoroughly reached and cleansed;* and the surgeon has not done his work if he stops short of this.

"It will do no harm, after this cleansing, to 'disinfect' the wound by washing it with the solution of chlorinated soda, with bromine, with a solution of permanganate of potash, or with any other preparation of the kind. But that this is necessary I do not believe, having seen cases in which it was omitted do perfectly well. The thorough cleansing by mechanical means is the main thing to be attended to.

"As to the second indication, it is to be met simply by using as a dressing a preventive of oxidation. Sugar, a hydrate of carbon, which does not give up its oxygen, and which is well known for its preservative powers in the case of meats and fruit, is admirable for this purpose. Powdered white sugar is thoroughly and thickly dusted over the wound, or a thick syrup is put on like any other wet dressing, by saturating clean rags with it. I prefer the former method, the sugared surface being covered with wet lint or rags, kept in place by adhesive plaster, or by strips of bandage tied just tightly enough to keep their place.

"Coal-oil, turpentine, or any other carbo-hydrogen, if pure, would answer, but the sugar is less offensive, and does not give pain. A mixture of pulverized charcoal with the sugar answers very well when the odor does not quickly disappear after the cleansing."]

LECTURE VI.

OF WOUNDS AND INJURIES LOCALLY CONSIDERED.

Scalp—Peculiar Dangers and Precautions—Face and Eyes—Concussion and Compression—Treatment for, and Cases—Throat-cutting—Wounds of the Chest and Venesection—Hæmastasis—Of the Abdomen and Intestines—Peculiarities of Treatment—Of the Joints, Anchylosis, etc.

WOUNDS OF THE HEAD.

THE scalp is much exposed to cuts and contusions, and the more liable to be seriously injured by them, inasmuch as it is abundantly supplied with nerves and vessels, some of which communicate directly with those of the membranes investing the brain within the cranial cavity. Erysipelatous inflammation may be easily excited in this part, and extend over the whole head and face. A trifling blow may occasion effusion of blood between the scalp and bone, which may form a tumor and remain stationary for a long period. This tumor will take on inflammation from a very slight additional injury; and this inflammation may extend within the cranium, producing meningitis; or the pressure on the bone, without any violent action, may occasion caries. Such tumors sometimes appear on the heads of new-born infants, being occasioned by pressure against the parieties of the pelvis.

Months, and in rare instances, even years after the scalp has been injured, troublesome *nervous symptoms* may ensue—twitchings of the muscles of the face—sometimes paralysis of the limbs, or convulsions resembling epilepsy, occur.

Gun-shot wounds of this part are more dangerous than other kinds; though recovery is not impossible, even when the skull has been fractured and the brain itself injured. Both tables of the skull, may, however, be fractured, without affecting the brain. A ball will often take a circuitous course for a considerable distance between scalp and skull.

Wounds of the face are no more to be dreaded than those of other parts, except in as far as the organs of sense are involved, or permanent disfigurement becomes a consideration. Another peculiarity that may be noticed, is closure of the salivary ducts, giving rise to fistulous openings. [See Second Part.]

The sight is generally more or less injured by any wound *near the eye*—though a ball has been known to enter the socket, and lodge between the eye and orbital plate, without obstructing vision. The destruction of one eye may cause paralysis of the other. When the eye-ball has been so injured that it must evidently be destroyed, it will save the sufferer much pain to puncture it and let the humors out. This, however, should not be done, merely because the sight is irretrievably lost. Save the eye to look at, if not to look through. The external ear may be lost altogether, without any loss of hearing.

In treating wounds of the *hairy scalp*, the first thing you have to do is to turn barber. *Shave* off the hair for a considerable distance around the wound. Neglect of this, by preventing proper examination as to the extent of the injury, may lead to the death of your patient. Remove any foreign substance or coagulation of blood. Then ascertain, with scrupulous care, whether or not the bone has been injured. The mere fact of fracture does not authorize trephining. [The symptoms requiring it will be noticed when speaking of that operation—see p. 103]. Carefully adjust any portions of the scalp that may have been torn loose. Fix them by adhesive straps and bandages, if possible—if not, the interrupted suture may be used.

Measures should be used to *prevent* extensive *inflammation*, such as cloths kept wet in moderately cold water. This is more important as a means of excluding the air, than of directly keeping down inflammatory action. At night, if not all the time, a slippery elm poultice should be added. Should dangerous inflammation set in, emollient poultices are indispensable. Cooling lotions may be required, such as a solution of muriate of ammonia (sal ammoniac).

After the inflammation seems to subside, it may assums an indolent form, requiring stimulating astringents. I would use tincture of capsicum and myrrh, either alone or in combination with the Geranium maculatum and a strong decoction of white oak bark.

Constitutional treatment must not be neglected. As soon as possible after receipt of the injury, if it be severe, the patient should have a brisk hydragogue cathartic; after which, diuretics and diaphoretics should be freely used. I may indicate as suitable ones, an infusion of dwarf elder and queen of the meadow (Aralia hispida and Eupatorium purpureum), or of the ascelepias, with the sudorific powder (Form. No. 9). The bowels must be kept open by gentle aperients. For this purpose you may resort to the anti-bilious pill (Form. No. 8); or, in the appropriate cases, to the liquid extract of juglans, adding an equal quantity of brandy and of molasses and a little cloves or capsicum, and giving from two to four drachms a day of the mixture. This prescription is at the same time tonic, stimulant and aperient.

The *diet* should be light, unirritating and unstimulating. Regard must be had to this rule for several weeks.

If the head has been simply *bruised*, without laceration of the integuments, but with sensible effusion below the surface, it is customary to open the tumors and let out the extravasated blood. This should never be done, unless in the three following cases: immediately on the receipt of the injury, before any soreness or sensible inflammation comes on; or after it has entirely passed off, and a large tumor continues stationary for a long time; or, finally, when a large blood vessel is ruptured and requires to be tied. In ordinary cases, any extravasated blood is soon absorbed.

The scalp, *after healing*, will, in some instances remain *tender* for a long period. When there is considerable inconvenience from this source, the wound must be reopened. An incision may be made down to the bone, and suppuration excited. This is the common practice. I have preferred a free application of caustic potash, followed by emollient poultices. The discharge should be kept up for several weeks.

Should *erysipelatous* inflammation at any time supervene, with violent constitutional symptoms—give the acetous emetic (Form. No. 4), combined with some diaphoretic tea, in broken doses of from half a drachm to a drachm, repeated every fifteen or twenty minutes, so as to keep up nausea for severnl hours; finally, vomiting and following up with a brisk cathartic. Treat the eruption, meanwhile, with stimulating applications, such as the compound tincture of myrrh. If such means are insufficient, you must resort [as mentioned under "Traumatic Erysipelas"] to the strong alkalies, with warm fomentations and poultices.

Concussion and Compression of the Brain.

A sudden and violent blow on the head, whether organic injury be occasioned or not, generally *stuns* the person. That common word expresses a degree of *concussion*. In severer cases, the patient is found in an entire state of insensibility, even the function of respiration being for a while suspended. This returns, and with it a gradual restoration of the senses. The mind, however, is still for some time wandering. At this stage the pulse is nearly natural, but if you attempt to rouse the patient, his breathing is disturbed, and the action of the heart quickened. He may try to get on his feet, but falls again, like a drunken man. This inability to move will sometimes continue, after the person has become conscious of all that is going on around him.

Concussion, as I observed, is a "stunning"—a *shock* to the very center of the nervous system, occasioning a temporary suspension of consciousness—and has no necessary connection with *compression*, contusion, extravasation, or any other permanent injury.

It is not essential that you should be able to decide at once whether it is a case of simple concussion. If it is, the patient will "come too," if it is anything more, either the fact is obvious, with its external cause, or there must be time for a partial recovery before it can be ascertained by its effects. Superficial examination can never be conclusive. The internal plate may be pushed in, while the outer is still sound and in place. You have no right to trephine on a mere suspicion that such may be the case.

The early TREATMENT is the same, whether you have afterward to operate or not. It is stimulating, of course. Besides the popular olfactory applications (ammonia, etc.), I advise stimulating applications to different parts of the surface, the lower extremities particularly. If he can be made to swallow, give comp. tincture of myrrh, and apply several large dry cups, or common tumblers, along the course of the spine. If these means are not sufficient to rouse the patient, give stimulating injections—say the common emetic powder with capsicum, (Form. No. 10,) or the compound tincture of lobelia, (Form. No. 6.)

The old practice of *bleeding* people back *to life*, in these cases of suspended animation, is almost as mischeivous as it is absurd. The brain is not inactive from too much blood, but too little, as the pallid face plainly shows. The loss of an ounce or two of blood in such a state of the system, may be the loss of life. Indeed, all modern authorities are against bleeding, until reaction is established. For the dangers incident to that stage, however, we have better means to recommend.

As soon as the patient is sufficiently *restored*, if there be symptoms of violent reaction upon the brain, give him an active stimulating cathartic—our common hydragogue purgative, for instance, combined with eight or ten grains of capsicum, or Aralia spinosa (Southern prickly ash) is better.

Perfect restoration of consciousness and all the animal functions may not take place for several days. The danger is not over till this is brought about; it is great and imminent whenever the pulse continues feeble for many hours. The shock has proved fatal, where no lesion of the brain could be discovered. There is no reason, however, for a discouraging prognosis, if the patient continue to improve, though it be but slowly, and the symptoms of compression or effusion on the brain do not supervene. In such circumstances, the greatest possible quietude should be enjoined. The slightest disturbance will affect the pulse.

[Belladonna is my favorite agent in these cases, if there is evidence of a feeble circulation in the nerve centers. It should be used, however, in small doses to get its stimulant influence —say in the proportion of ℞. Tincture of Belladonna, ʒss to ʒj; water, ℥iv, a teaspoonful every three hours.]

Until fully restored from the effect of the shock, the *rationale* of all *treatment* is to restore the equilibrium and activity of the circulation. If there is an inclination to costiveness, repeat the cathartic. If there is retention of the urine, use the catheter.

Impairment of the senses and the intellect, as well as of bodily health—a tendency to inflammation or neuralgia—occasionally follow as the *remote consequences* of a cerebral shock. In such a case, pursue an alterative course of treatment. Give the alterative syrup, alternating occasionally the restorative bitters, with small doses of podophyllin and leptandrin. Never omit applying the irritating plaster to the nape of the neck, and to any part of the spine where there may be irritation. I have found it to act well when applied on the arm, between the insertion of the deltoid muscle and the elbow.

There is presumption of *compression*, if after recovery from the effects of concussion, the patient continues to suffer pain in the region of the wound, with disturbance of the cerebral functions. The pain, however, and all local symptoms, may be absent, while frequent fainting and spasmodic affections, from slight occasions, or occurring periodically, sufficiently attest the state of the case. There is generally some derangement of vision and of the other senses. Nausea and vomiting are not unfrequent symptoms.

If these conditions last for a considerable time, or more obvious indications require it, you may have to trephine and elevate the bone. If there is already a straight fissure, you may be able to elevate without trephining. Or, if the part and state of the scalp permit, it is sometimes possible to raise the cranium and relieve the brain, by means of an air pump, or cups applied several times. (See Trephining, Part II).

When there is evidence of oppression, or tendency to inflammation of the brain, the feet and legs should be immersed to the knees in water, as hot as it can be borne; and kept there, till by that and other means, the desired relief is obtained—the head, meanwhile, being subjected to the influence of cooling lotions, or a small stream of cold water.

I was cognizant of a case, where a falling limb produced a comminuted fracture—a literal smashing, of the parietal bone. The patient lay several hours in a comatose condition. Three physicians agreed that nothing could be done for him. His widowed mother, a poor woman, but not so ignorant as many a wealthy lady, believing in the good old maxim, "while there is life there is hope," observed, as reaction advanced, that his head was too warm while his feet was too cold. On her own responsibility, therefore, and the suggestion of her common sense, she immersed his feet in hot water, and kept pouring a cold stream on the wounded part. She also administered a strong stimulating injection. By these "*unprofessional*" means, he revived and escaped the danger of inflammation. As the cranium was *fortunately*, under the circumstances, completely *fractured* and not merely *compressed*, which might have required more surgical skill than it was worth while giving a *poor* boy) the elasticity of the brain *set* its own bone—more accurately, perhaps, than art could have done it; and the boy recovered perfectly. In an adjoining neighborhood, and about the same time, a rich man's son met with a similar accident. In his case the trephine was used by one of the medical gentlemen, whose prognosis was mentioned above, though not till after the patient had been allowed to lie fourteen hours—nothing done for him, of course, *secundem artem*, till "the doctor" could be brought from a distance of sixteen miles—this patient died.

Wounds of the Neck

are principally important from the liability to fatal hæmorrhage. Death may quickly ensue from this cause alone, if any of the larger vesses are wounded.

Suppression of Hæmorrhage is, therefore, the first point of TREATMENT; for which purpose it is often necessary to apply the ligature to veins as well as arteries. It is always best, however, to check the hæmorrhage from veins, by compression, rather than the ligatures, to avoid the danger of phlebitis. When the hæmorrhage has been checked, bring the lips of the wound together, and fasten them by sutures, using precaution to prevent your dressings from being thrown off. Most cases of serious wounds in the throat occur in persons attempting suicide, and may require the hands to be tied, as well as head to be secured in one postnre, leaning over toward the wound. This last precaution is proper in all cases. The patient should not even be allowed to talk. Eating and drinking have often to be restricted, or altogether interdicted, for awhile. These wounds heal very rapidly, and require but little attention after the first proper dressing, except from good nurses.

Wounds of the Chest.

When the cavity of the thorax is entered, the lungs are, of course, almost always injured. When this is the case, air will pass out through the wound, causing a bubbling of the blood as it flows. The respiration will be short, and the expectoration bloody. The patient will often complain of a sensation like a *stitch*, at every breath.

The external passage of air must be stopped as soon as possible. Put a plaster over the opening; and place the patient in such a position that the wound may be the most dependent part. Frequently change the dressing, to give exit to the blood and matter, using, however, *no compression.*

Venesection is recommended in the books, "to divert," as they say, "the blood from the lungs." But surely it is as well to bleed to death through a wound in the chest, as through one in the arm! We are told that the bleeding "can hardly be carried too far; for if the patient be not relieved by this measure, *no other can possibly save him.*"*—(Gibson, vol. I., p. 19). The reason given for bleeding, in such cases, is as absurd as the process itself. We are told by the same author to "*draw blood copiously* from the arm, which will have the effect of *diverting it from the lungs*, and thereby save the patient, perhaps, from suffocation." Now it is an anatomical absurdity to speak of diverting the blood from the lungs, by drawing it from the arm, as if the lungs and the arm were merely supplied by different branches from the same arteries. The blood going to the arm comes through the aorta from the left side of the heart. The blood going to the lungs proceeds from the right ventricle; hence it is obvious, that by taking blood from the arm we act upon the systemic instead of the pulmonary circulation, and can not possibly influence the determination to the lungs, or produce any diversion. The only effect that we can produce, is to diminish the amount of venous blood returning to the right side of the heart, which object could be accomplished by a loss of venous blood from any portion of the body—and which can be accomplished with far greater facility and efficiency, by the application of ligatures, without any loss of blood.

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*Such expressions are frequently used by Old School writers, who seem to think that when they have reached the limits of their knowledge, they have exhausted all the resources of science.

As the only object which the surgeon can hope to obtain by bleeding, if he understands anatomy, is not the diversion of blood from the lungs, but a diminution of the total amount of blood in the body, common sense would suggest the query, Why should we make such efforts merely to diminish the total amount of blood, when this loss of blood is the very evil and danger which is threatening the life of the patient?

It is desirable, however, that less blood be thrown upon the lungs. Any means, therefore, that will retain a larger quantity in the extreme vessels, or prevent its return to the heart and lungs, without permanent loss of it, ought to be resorted to without hesitation. Such a means we have in *hœmastasis*,* (cording the arms and legs so as to partially arrest the returning circulation, without impeding the arterial flow.)

Wounds of the Abdomen

are no less dangerous than wounds of the thorax. I believe them still more fatal. The amount of danger will depend, of course on the part and organ injured; but any penetration of the peritoneum is likely, from its great vascularity and sensibility, to bring on serious inflammation.

When the *intestines* are wounded, nausea and vomiting generally occur, the matter thrown up, as well as the stools, being bloody. Fæcal matter and fœtid wind pass out of the wound. A portion of the bowel may also protrude. There is often griping pain about the precordia. Cold clammy sweats are among the fatal symptoms.

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*On this valuable substitute for blood letting or blood wasting, as it should be called, interesting experiments have been made in the Eclectic Medical Institute. During the operation the pulse gradually sinks; the face grows pale; and even fainting is induced, if it is continued for an hour. (See Extract from Professor Buchanan's Lectures, page 21 et seq.)

Wounds of the *small intestines* present more dangerous symptoms than those of the large. Any part, however, of the intestinal canal may be injured, and recovery take place.

If an intestine has protruded, it will be too late to return it two days after the injury. The only chance then is to leave it open as an artificial anus.

The *adhesive* process goes on very rapidly in the intestines. If there be no protrusion and no division of the bowel, no sowing up is required. If it is cut for a considerable distance lengthwise, and also protruded, one stitch for three or four inches is sufficient. If it is quite severed, only two sutures are required, one opposite the other. The smallest thread and needle should be used, with as little handling as possible. And you need not be very nice about bringing the edges together exactly in their natural coaptation. They will unite in any part; and your turning and handling will do more harm than some degree of displacement.

Keep the wound open and in a dependent position, dressing it with simple salve to protect it from the air. The patient must remain quiet for the first twenty-four hours at least. At each dressing, press upon the wound a little, to force out the matter. After the second day, the external wound may be allowed to heal. For the first day let the patient eat nothing, and as little as possible for some days after. Let his *diet* then be cooling and unirritating. Everything he takes should be of easy digestion; solids had better be avoided altogether. Stimulants of all kinds must be proscribed. When it becomes necessary to move the bowels, this should be done by very small unirritating injections.

After healing, the intestine may contract so as considerably to diminish its caliber. This may give rise to cholic-like pains in the passage of its contents. In such a case, great strictness of diet must be observed. All indigestible things, such as raisin-seeds, fruit-rind, and perhaps all solids, had better be avoided.

Wounds of the Joints.

Injuries of the larger joints are almost as dangerous as any in surgical practice. The danger consists as usual in inflammation—which is much safer preventing than trusting to cure.

The limb should be placed in the *easiest position* that will bring the lips of the wound together, and be kept there, perfectly still, so as to avoid the necessity for suture. Adhesive straps will be sufficient, if this point be attended to; but the patient must positively learn what we mean by "rest;" must not be allowed for several days to move the affected parts at all.

If the KNEE joint is concerned, you should keep the limb *extended*, that your patient, in the event of *anchylosis*, may still be able to walk, though with a stiff leg. The arm, on the contrary, when it is the elbow that is affected, had better be secured in a *half-flexed* position. The danger in question results mainly from adhesion between the synovial membranes, on losing their contained fluid. The joint should not be kept *too* long motionless. As the wound improves, it should be gently exercised.

Treat the case in all other respects as you would a similar wound in other parts. The simple *cold water dressing*, secured from the atmosphere by a slippery elm poultice, is one of the best preventives of inflammation. When there is constant irritation and symptomatic fever, it may sometimes be necessary to administer a mild cathartic; in many cases however, the necessary motion may be productive of more injury to the limb than would be produced by the lack of catharsis. Diet of course must be light and unstimulating.

The practice of scarifying, blistering and leeching, about the wound, is not only unnecessary, but injurious.

If *inflammation* should have set in actively before you are called, or should supervene during treatment, cathartics are then indispensable—also nauseants, sometimes even to the extent of free vomiting, as when tetanus is threatened. Such local applications are meantime to be used as will induce or promote suppuration. Retaining the limb in an elevated position, is an important auxiliary in restraining or preventing inflammation.

Inflammation alone does not authorize *amputation*. Should the bones and cartilage be extensively shattered, leaving little or no hope of restoration, while danger of tetanus is imminent, immediate recourse to the knife and saw is justifiable, without waiting for inflammation. When we *must* operate, the sooner the better.

[My experience has taught me that it is not always good practice to close a wound in a joint, especially if internal parts are injured, and that the idea that the entrance of air is injurious is fallacious. My first case of wound of the knee joint was saved by a free incision giving exit to the fluid, and the patient obtained his first sleep for ten days immediately after. Of course it is not necessary to keep the wound open in a simple incision, but if the joint becomes inflamed, very painful, with accumulation of fluid, the wound should be opened. I indorse the opinions of the late Dr. Cooper, of San Francisco, embodied in the following propositions:

"1. That atmosphere, admitted into the joints or other tissues, is not a source of irritation or injury, excepting where it acts mechanically; as when admitted into a vein by producing asphyxia, into the thoracic cavity, by its pressure producing collapsion of the lungs, or when, by the long-continued exposure of a large amount of surface of any of the internal organs whose normal temperature is much above that of the atmosphere, it reduces it so as to produce a morbid action.

"2. That the division of entire ligaments about the joints is no impediment to their ultimate strength and mobility; but, on the other hand, this operation will often greatly facilitate the cure by enabling the surgeon to open the affected part fully, for the purpose of applying medicinal substances to the articular surfaces, when these are ulcerated or otherwise diseased.

"That the only true mode of treating ulcerations of bone, however slight, within the joint, is to lay it open freely, and apply remedial agents directly to the part affected.

"4. That opening the joints early, in cases of matter burrowing in them, is far more imperiously demanded than the opening of other parts thus affected, and the operation produces no further pain or inconvenience to the patient in any respect than when performed on parts remote from the joints.

"5. That after opening a large joint, the knee, for instance, by an incision several inches long, the wound should be kept open by the introduction of lint, or other similar substance, until the parts within the articulation become healthy, and, in all cases, it should be made to heal by granulation.

"6. That extensive wounds opening freely the large joints, such as the knee (even when lacerated, as by a saw, which must necessarily heal by granulation), do not as often give rise to violent symptoms as very small wounds, such as are made by the corner of a hatchet, an adze, or a pen-knife, which heal on the outside by first intention.

"7. That there are no known limits beyond which a tendon or ligament will not or can not be reproduced after division, provided the parts are made to heal by granulation, and that the present acknowledged rule of two inches being the maximum distance in which the divided ends of a ligament or tendon can safely be separated, has not the least foundation in fact. Each of the above propositions has been fully tested by experience in numerous cases, which, during the course of a series of articles, shall be drawn upon as largely as brevity will admit of."]

LECTURE VII.

BURNS AND SCALDS.

Distinction—Four Degrees of Burning—Their respective symptoms and dangers—The "cold water *cure*," and other specifics—The Ulmus fulva—Liniment—Rum and Molasses—Prevention of Deformity—"White-painting" contrasted with Slippery-elm dressing—Constitutional Measures.

UNDER this head are usually included all local injuries caused by the application of heat. Scalds are distinguished from burns by the mechanical state of the heated and heating substance; the popular meaning of the words may be considered as the technical one. All cases, then, caused by hot liquids are "scalds," while "burns" proper are those produced by solids at a high temperature. Greater injury may be done by oils and some other fluids, as they can be heated above 212°, the maximum temperature for water under ordinary circumstances. On this account some writers would restrict the "scalding" to injuries done by hot or boiling water. They are all, however, degrees of "burning;" and the specific difference is better marked by the distinction of solid and liquid, than by that of the chemical character or temperature of the substance inflicting the injury. The effect of a hot liquid, or

Scalding, is likely to be more superficial, and is chiefly dangerous from the extent of surface affected, the accident commonly occurring from some vessel upsetting over the sufferer.

Burns (including scalds), or the local effects of great heat, are *divided* into several kinds or degrees. Some distinguish four, some five or six.

The first degree of burning is when there is only a slight irritation produced, with redness of the surface, and the stinging or peculiar pain, but without vesication, or with only small vescicles, the fluid in which is readily absorbed. The inflammation, if any is excited, terminates in spontaneous resolution, at worst, only a superficial dry scab is produced, involving little more than the cuticle. There may, indeed, be considerable tumefaction, produced by serous effusion in the cellular substance; but the effusion is absorbed, the swelling goes down, and the part returns to its natural state and appearance, leaving no trace of the injury.

In the second degree, there is more redness of the surface in the first instance, and this is succeeded by diffused vesication. The serous fluid is not absorbed; and when the vescicle or vesicles are broken, a purulent secretion from the surface takes its place. Still there is no real ulceration, or destruction of parts, farther than the cuticle, and no necessity occasioned for granulation. The skin is merely converted into a secreting surface, and may continue to discharge pus for a considerable time. If exposed to the air, a crust or scab will form, protecting the parts beneath, and allowing a new cuticle to form there, as appears when the scab falls off, and presents the surface restored, without a scar, as in the former case.

In this form or stage of the burn, if care be taken not to puncture the distended cuticle until purulent matter begins to be formed beneath, the pain will be but slight, and the cure facilitated; but if by any accident or officious ignorance, the cuticle is ruptured, and the raw surface exposed to the action of the atmosphere, the pain is often intense, and the danger from irritation and inflammation may become very great.

In cases otherwise of this character, where gunpowder or other coloring matter is forced through, under the surface, it will remain a long time, as no sloughing occurs to carry it off.

The third degree is when the heat is so intense as, if not directly to disorganize the surface, to so far lessen its vitality as to render destructive inflammation inevitable. If, however, the extent of the injury be small, and the patient's constitution good, the ulcerative process will very generally terminate of itself, granulations form, and the surface heal up, leaving only an ugly cicatrix. But if the burn be large, much constitutional irritation will generally attend it; and the granulations, instead of healthy, will be of a fungoid character. The discharge also will be often excessive, and accompanied with an offensive smell. All these bad symptoms will be worse, if there is muchconstitutional derangement. Indeed ,serious ulceration may follow the simple vesication, when the general health is very bad, but such a result is rare.

In all cases of ulceration from burns, the cicatrix remains red and glossy for a long time after, or of a higher color than the surrounding surface, with a puckered appearance, which is permanent.

When the heat is so great as of itself to destroy the skin, (which some make a fourth variety) the pain is very great during the whole progress of the case, and even continues after the cicatrix has formed. The patient will be unable to use the parts, or the muscles and tendons passing near it, in consequence of the preternatural susceptibility, especially if it were a part of the limb that was burnt, and that be in a dependent position. The tendons often contract, if near a joint, and when, in addition to this, adhesions have been allowed to occur, the use of the part or limb may be lost forever. These contractions and adhesions may not occur, in some cases, till after cicatrization, the irritation still continuing and producing a deposit of coagulable lymph.

The fourth and last degree (in our scale) is the true or complete burning up of the part; vitality being at once destroyed and disorganization effected. The cause of this is usually the application of some highly heated *solid* substance, as white hot iron. The part itself being involved in flame or other burning substances, will of course have the same effect. If this complete burning be also extensive, it will be most certainly fatal.

The patient, in this case, experiences no pain for a time—at least none after the first *touch*. The part is so effectually killed as at once to annihilate sensibility. The burnt part is "burnt to a crisp," leaving only an eschar. If there is sufficient power in the system to react, sloughing takes place; the eschar is thrown off, and a deep ulcer is formed.

The ulcer, in this case as in the last, is liable to suppurate and excite, also, an unhealthy condition of the surrounding parts. Not unfrequently abscesses will form there, with sinuses. The adjacent bones or joints soon become affected. The inflammation excited is sometimes immediately followed by extensive mortification.

If the patient does not *die* before reaction comes on, the constitutional irritation produces *hectic*, and he soon sinks from *exhaustion*.

The *danger* depends much upon the constitutional vigor of the patient, and upon the locality of the burn as well as its extent. Children are not so likely to recover from the effects of a scald as adults, owing to the greater susceptibility of their nervous system. Very small children are apt to be thrown into spasms, when the effect upon the brain proves speedily fatal. Very old persons suffer much less than any others; but erysipelas occasionally follows, which is very difficult to control. Erysipelatous inflammation is particularly to be apprehended, when the head is the part affected. When it is the abdomen, the inflammation is liable to extend to the vital organs beneath. A burn or scald on either of these locations is always to be regarded as dangerous, and proportionally more dangerous as the patient is younger. A slight injury of this kind upon the scalp is to be looked upon with suspicion; and you should take care to heal as soon as possible when upon the abdomen. Burns upon the genital organs are very hard to cure, and give rise to strong constitutional symptoms, in consequence of their peculiar susceptibility and great sympathy with all the vital functions. Upon the course of the *tendons* these wounds tend more than any others to produce contraction, and when *nerves* are also involved in the eschar, or contraction, there will be danger, for a long time after, of tetanus or neuralgia.

Violent *constitutional symptoms* follow an extensive burn, let it be in what part it may. There will, at first, be rigors, disturbed and oppressed respiration, and general depression, with a pulse for a time low and feeble; but if there is sufficient vigor in the system for reaction, the subsequent inflammatory fever is often very violent.

Scalds—unless when caused by hotter liquids than boiling water, or unless the part should remain in the hot water long enough to be itself boiled or cooked—belong to the second degree, in which nothing worse than vesication is the necessary result. Generally, therefore, their only danger is from the extent of surface involved. How large an amount of cutaneous tissue may thus have its function stopped, or changed, without *thereby* causing death, is not known. Some author has stated that life could not be supported after one-seventh of the surface was vesicated; but I am sure I have had cases in which a much larger fraction was not only blistered, but "flayed" away with the clothes.

The most important point of

TREATMENT

in all kinds and grades of burns, is the keeping of the surface entirely shielded from the atmosphere.

In slight cases, the most common and convenient means in use, is to immerse the parts in cold water. If this simple application can be kept up for several hours, without any intermission or exposure to the air, it may give *permanent* relief and prevent even vesication. But if the burn or scald be extensive, so as to occasion much depression of vitality, this "cold water *cure*" may be anything but certain or even *safe*. Care must be taken, then, if it is resorted to at all, not to expose the parts so much or so long to cold, as to occasion any sensation of chilliness.

Numerous *applications* "for burns and scalds" are in repute with the profession or the public, some of them "specifics." Many of them are really valuable; and I will mention a few, selecting those whose good effects I have had opportunity of testing, or those which, if not intrinsically superior to others, are oftener to be relied on, because universally accessible. Not the best possible, but the best practicable—the best under the circumstances of the case—is the rule for the medical man, as well as the moralist.

Common *flour* dusted on the part, especially where the cuticle is abraded, and requires a substitute for the natural screen, frequently answers the purpose, and very sensibly relieves the pain. The fluids discharged are absorbed by the flour, and form it literally into a "crust," beneath which a new cuticle is *concocted*, and resolution readily effected, if the case admit of so favorable a termination. A better mode of using flour is to wet it yourself with vinegar. This acid paste is very cooling, and in many cases affords instant relief, and greatly promotes resolution.

Starch, either wet or dry, makes a very good application.

But the *best* application, in my judgment, both for present relief and future protection against inflammation, especially as it is equally applicable *should* extensive suppuration or sloughing come on, is our national and inestimable remedy,

The *Slippery Elm Bark.*—Have it always at hand, in the powdered state, and make it up into a poultice, with either cold or warm water, according to circumstances. If the case be a scald of small extent, or only a superficial burn, the application had better be cold. But if the scalding has produced or threatened constitutional depression, or if the burn has penetrated deep, and occasioned ulceration, make your poultice with *warm* water, or, still better, with warm milk and water.

If the parts are entirely *insensible*, some stimulant should be added, such as brandy, or the tincture of capsicum, or of myrrh. In this case cold applications must be strictly proscribed, especially if the patient be chilly.

The latter as well as the earlier stages, are equally well suited for the slippery elm. If, however, you are called to a case after extensive inflammation and constitutional irritation have occurred, the poultice should be made up, as before remarked, with warm milk and water. In this event, linseed oil may also be added. This latter, however, although otherwise an excellent application, will sometimes produce too much pain for the patient to bear. A paste made of flour, wet with sweet cream, and spread over the part, is good. In short,

The most *emollient* application is the best—constantly bearing in mind, also, that in any stage of burns, the surface must be shielded from the atmosphere. Any soothing article that will also meet this indication will be useful; but I know of none that will compare in efficacy with the finely pulverized slippery elm. When moistened, it is entirely impervious to the air, and not liable either to dry and harden like so many mere *pastes* (it can always be kept moistened, by adding water or other fluid, if necessary); nor does it require gauze, silk or other material, between it and the effected surface, as there is no danger either of irritation or of adhesion. It may be kept on for a long time, being re-wet when required, or thickened by more of the powder being added. A further advantage is, that when, not too wet, when made large and thick, or thickened as occasion requires, it will absorb any fluid that may be discharged. Finally, when it is to be removed, you have only to soften it still more and *wash* it away—a very different affair from that of getting off the crust formed by flour, starch, etc.

Among other *popular remedies* used throughout the country, I may mention *warm water*. This is often used alone with excellent effect, especially in cases distinguished as contra-indicating cold applications. Lime water and olive oil in combination, make an excellent application. A solution of the acetate of lead affords great relief at first; but is liable to serious objections. When long continued, it will leave the parts to which it has been applied in a partially paralyzed condition, even where it is not absorbed so as to have its characteristic deadening influence on the general system. When the sore is deep, it will be changed by this insidious palliative into a very obstinate and ill-conditioned ulcer. It has no advantages over the vegetable astringents which are entirely safe, and liable to no such objections. The Quercus alba, Geranium maculatum, Epiphagus Virginiana, Statice limonum, or Pteris atropurpurea (Rock-break), will answer very well as astringent applications, if applied in cold infusion.

As a *refrigerant*, simple cold water, or a solution of borax in cold water, is to be preferred to the acetate of lead.

Anodynes.—In general, I believe, there is no better application than the Ulmus for allaying the pain. But if the pain be intense and urgent, it may be wet with a strong infusion of opium or hyosciamus. An excellent application for allaying the pain is an ointment of stramonium and tobacco, simmered in cream, with a little spirits, with or without an addition of morphine. The patient may, at the same time, take from three to five grains of the extract of hyosciamus every thirty minutes, to the amount of fifteen or twenty grains in the course of twenty-four hours. This article is more purely anodyne than opium, and does not produce its peculiar effects. It leaves the bowels as well as the skin open instead of constipated or constricted, and makes no very lasting impression.

After acute symptoms have subsided, *simple dressings* are generally all that is necessary for the ulceration. The black salve, or simple cerate, will shield the part from the air, and be sufficient in all ordinary or healthy cases. If *fungus* appear, the sanguinaria, sprinkled over it, will commonly keep it down and change the process into healthy granulation. Oil of amber exerts a very favorable influence on indolent burns. If there be much *hardness* of the parts, they may be fomented with hops and vinegar. A still better plan in such cases will be, to take the leaves of the common mullen, moisten them with warm vinegar, and after allowing them to cool, apply them in the form of a poultice.

In many instances, *active stimulants* are necessary after the subsidence of acute inflammation. In such cases, I have been in the habit of combining several stimulants with emollients, in the form of a liniment. The following formula may be easily remembered: Take spirits of camphor and tincture of opium, *aa.* ℥ss; spirits of turpentine and tincture of capsicum, *aa.* ʒj; olive oil, ℥ij.

This preparation should be applied once or twice a day, and although it produces, at first, considerable smarting, the parts soon become easy and take on a healthy action, which rapidly advances to the healing point. I have used this liniment with excellent effect even in *recent* cases; and would recommend it in those cases where the vitality of the parts has been much impaired, or the burn itself has penetrated deeply. When the surface is wet with this, or some similar *oily* stimulant, it can be covered with the elm poultice, as usual.

Rum and Orleans molasses is a southern specific, which has been much extolled by several physicians of my acquaintance. One of them assures me that he has seen it used, with the happiest results, in the most severe cases, both of scalds and burns. It frequently prevents vesication, and even discusses the inflammation, where extensive vesication has previously been caused. In a few instances, I have made this prescription for the grocery instead of the drug-store; and the result of its use has fully answered to its reputation. With my limited experience, I can not say to what extent this application is available; but I am inclined to prize it highly. The spirits and molasses should be intimately mixed, and applied cool, either by wetting an elm poultice with the mixture, or saturating raw cotton or Canton flannel with it, and then applying a covering wet with some article impervious to air, such as gum arabic water.

The carbonate of lead and linseed oil, mixed as in common *white paint*, is highly recommended by Prof. Gross, of Louisville (in his notes to the American reprint of Liston's Surgery).

It is to be applied by a swab, or by literally *painting* the parts with a soft brush. Whether the excellent results following its application are attributable to anything else than its perfect exclusion of the atmosphere, Prof. G. does not decide. This mechanical advantage of the article, however, is not all that requires consideration. Its medicinal properties can not be judiciously overlooked. I have seen the article used with excellent effect; but I have also known severe constitutional symptoms arise from lead, so applied—a result which Prof. G. thinks must be very rare, if indeed it ever occurs. In anticipation of its possibility, however, he prescribes the sulphate of magnesia as an antidote. This counter-action of the lead salt, taken in through the skin, by that of magnesia, through the bowels, is no doubt quite scientific and *perhaps* physiological, but the human body seems to me rather too expensive, as well as complex, an apparatus for carrying on these simple chemical experiments. This objection might be impertinent, if there were no other articles just as efficacious and certainly safer. The fashion of ignoring the question of danger from a medicine, when comparing it with another, is too common an abuse of the privileges of the profession. I by no means mean to deny the virtues of the Louisville Professor's favorite article, but I certainly prefer it as an application to my house, rather than my body; and why use it and authorize its use so freely, under even the possibility of danger, unless we are first assured that the still simpler article of powdered elm bark is not equally efficacious? It shields the part from the atmosphere, and presents as soft and yielding a surface as it is possible to imagine. If it does not act directly on the nerves, it keeps everything else from doing so. In none of these respects can white lead compare with the elm; its consistence, temperature, etc., can not be altered while on; and the difficulty of getting it off when dry (a perfect contrast to the facility attending the elm), is in fact only exceeded by the difficulty of removing its effects from the general system. If it is not absorbed so as to exert a poisonous influence, it has at least no advantage over many other articles, and is not at all to be compared with the best. Independently of the positive objections to any preparation of lead, my experience would lead me to claim for the unobjectionable Ulmus, greatly superior value. I have known cases where the white lead was properly and faithfully applied, sink under the injury; and others equally extensive, get well under the use of the elm; without there being any other assignable difference than the superiority of the local application.

One case I remember well, in which a child was scalded by the overturning of a tea-kettle—the boiling water was poured into its bosom, and ran in a scalding stream over the whole front surface of its body down to its very feet. When the mother removed its clothes, the cuticle came away with them in large patches, from breast, belly and thighs; and the feet were literally skinned all round. In fact, it would scarcely be an exaggeration to say, in popular language, that the child was half flayed. The mother, being something of a hydropathist, had wrapped the patient in the "wet sheet"—a much better application, by the way, than would perhaps have been thought of but for hydropathy. Being informed of the nature of the accident, I carried with me a large bundle—some two or three pounds of the finely pulverized bark. I arrived about an hour after the accident, and found the child in a state of delirium, and the whole affected surface highly inflamed, notwithstanding the cold water *panacea*. I soon converted my bundle of powder into at least a peck of poultice, and literally wrapped the child up in one enormous poultice of about two inches thickness. Over the poultice were laid cloths wet with *cool*, but not cold water. These kept every part cool and moist until the irritable condition of the pulse subsided, and the patient seemed to be in a comfortable and natural sleep. Afterward the cloths were wet in tepid milk and water. On the first removal of the poultice, the next day, several patches of the size of a man's hand were found discharging pus, but of a healthy character, the intervening spaces being only slightly reddened and tender. The surface of the legs and feet was also suppurating. The poultice was renewed and continued for several days, when much of the suppurating surface had ceased to discharge, and no constitutional irritation remained. But few ulcers were formed, and those not deep. To these the Black Salve was afterward applied, and the cure soon complete.

In another case the patient had stepped into a kettle of boiling water, and the cuticle came off with the stocking, about half way up to the knee. The foot was immediately immersed in cold water, and kept there a short time. As soon as I was called, the slippery elm poultice was applied, and kept on for twenty-four hours, being wet with milk and water. On the first change of the dressing, it was found that the scalding, or rather boiling, had penetrated deeply into several parts of the foot, on each side, below the malleoli. Extensive sloughing was threatened. The poultice was re-applied, with the stimulating lotion before recommended. Some sloughing actually occurred, but by perseverance all danger was averted, and the limb soon healed, without any contraction or deformity. In this instance, I should state, that lime-water and sweet oil were used with the liniment.

In one case, treated with the rum and molasses, the patient had stepped with his bare foot upon red hot iron, literally *crisping* the sole of his foot. The first instinctive application was, as a matter of course, a cold pediluvium. Very soon, however, the specific was prepared, and put on by means of a roll of cotton well saturated, and kept wet with it for twenty-four hours, when the inflammation surrounding the eschar was found to have subsided. The rum and molasses was continued in connection with slippery elm. A considerable portion of the integument and superficial muscle sloughed off. There was also some contraction of the muscles and tendons, which, however, was prevented from going far, by means of suitable machinery.

Constitutional symptoms must be watched and met in all cases of serious burning. If the patient be much prostrated, he may need stimulants, but care should be taken that stimulation be not carried too high or kept up too long; for when reaction comes about, the consequent fever is apt of itself to need means for restraining its violence. As, however, it is desirable to effect this object without excessive depletory or weakening measures, it is better in the first place to avoid adding in any degree to the excitement by stimulation.

Diaphoretics will very often be requisite. Among the most valuable is a strong infusion of the Asclepias tuberosa, taken freely. To this may be added the Monarda punctata, or the Origanum majorana. If there is much nervous irritation, the Scutelaria should be added.

Active but mild cathartics should be used. They should be repeated vigorously, when the brain becomes affected, as it frequently does, from continued nervous irritation. Counter-irritants and revulsives must not be forgotten in that event; though still the most important means, by far, is the removal of the cause, by allaying the original irritation at its source.

An important *caution* for those who are not accustomed to these cases, is to keep fingers, toes and other contiguous parts, from coming in contact with the abraded surface. Another cause of *deformity* to be guarded against, is the contraction of muscles and tendons. For this danger you must study the anatomy of the parts, and resist the tendency with suitable splints or other modes of applying force, flexing or extending as the case may require. When this precaution has been neglected, the case is not quite irremediable. The contracted tendons can be divided when necessary, though I have hitherto only found it necessary in any cases that have fallen into my hands for repair, to dissect away the *adhesions*.

Superficial deformity, by irregular formation of the new integument, is best obviated by proper dressing and attention during the healing process. This becomes an important consideration, when exposed parts of the body, as face, hand or neck, are in question—particularly in the case of females. A bad cicatrix may sometimes be divided or re-opened by blistering, with a fair chance of improvement.

LECTURE VIII.

EFFECTS OF COLD.

Frost-bites and FREEZING TO DEATH—Recovery from suspended animation—Progress, symptoms and results of FROST-BITES—Liability of particular parts and persons—Precautions in restoring frozen parts—Efficacy of Snow—CHILBLAINS—Variety—Liability—Relapse and chronic cases.

Too low a temperature is equally inimical to life with too high; and indeed the ultimate effect of a "frost-bite" is very similar to that of a "burn." Some parts of the body will suffer from exposure to cold much sooner than others. The peculiar stinging pain of intense cold ceases after a while, and the part becomes so entirely insensible that the individual knows not that he is partially *dead.* Complete freezing to death comes on in a similar way. After the first ineffectual effort of the system to bear up under the continual abstraction of heat, an irresistible sensation of drowsiness comes on, and the sufferer feels only inclined to rest and sleep. The sleepiness, however, is death in its most attractive and insidious form of approach. If the exposed person be aware of his danger, he may bear up a long time by force of will and muscular motion. Snow being a bad conductor of heat, and the surface of the body already reduced to its temperature, vitality may be preserved longer by wrapping up in that natural blanket than by *resting* in any other cold environment. Loss of voluntary power and of consciousness is soon followed by a cessation of the organic functions: the lethargy becomes the sleep of death. This sort of death, however, may be only temporary; from even this complete and dreamless sleep, the sleeper may be awakened, by a gradual restoration of the vital stimuli.

The essential difference between this sort of death and the more common is, that it results rather from a cessation of the functions than a change necessitated by a greater or less disorganization. It is a stagnation rather than an evaporation of life, so to speak. When an individual is found in this state of

Suspended animation from cold, *some* of the same means may be resorted to for the *restoration* of life, as in cases resulting from nervous shocks, pressure on the brain, etc. Among the different stimuli resorted to, however, the utmost care must be taken to have that of heat only gradually restored. As in asphyxia from drowning, artificial inflation of the lungs may sometimes aid, though it is not so directly indicated as in that case. The air so used should be warmer than that to which the body has been exposed. The rest of the body, however, requires motion rather than warmth at first. It should be immersed in snow or cold water, in which common salt is dissolved, if sea-water be not accessible. In this cold saline immersion, the whole surface should be rubbed with the bare hands. On being taken out, after a few minutes, friction should be continued with dry flannels, until some spontaneous warmth is, if possible, excited. The patient should then be wrapped up in a dry blanket and laid in a cool bed and cool room. Some moderately warm and gentle stimulants should, in the mean time, be applied to the rectum and the stomach, if the patient is so far restored as to swallow, which he may be made to do instinctively, before perfect consciousness has returned.

When a part of the body only has become insensible, and had its organic functions suspended, or been, as it is said,

FROST-BITTEN,

the same *principle* of treatment is to be observed. If much heat be too suddenly applied to the part, violent inflammation, if not speedy gangrene, is almost sure to occur. The spontaneous restoration of vital warmth, on entering a warmer medium, is of itself painful and dangerous enough, and to be made as gradual as possible.

The parts most liable to suffer first from cold, are those at the greatest distance from the source of circulation, as the fingers and toes; or most isolated from the general current, as the nose, ears, etc. The trunk of the body is not only protected by clothes, but by its mass and the easy communication of heat from part to part, in addition to the fact that the heat is conducted or radiated from a much less proportionate amount of surface. The importance of this distinction is very sensibly felt in the superiority of mittens over gloves, for the mere purpose of warmth. Hence one reason for the instinctive drawing up of the body when suffering or, as it is said with mechanical correctness, shrinking from cold.

The *first* visible *symptom* of a part having been unduly exposed to cold is not paleness, nor the *florid* redness of over-action of inflammation, but a sort of livid or dull red, indicated by the expression, "looks blue." This is accounted for by the stagnation of venous blood, and the diminished quantity of arterial blood attracted to the part. Certain depressing emotions, or states of mind, seem to be indicated as having a tendency to produce the same effect upon the cutaneous capillaries. Shame reddens, but chagrin and disappointment looks "blue." The depressing or *negative* feelings are, as it were, internal cold. Real physical cold, however, to a mortal degree, is the only thing that produces the complete blue or "black looks."

If the exposure to cold, or abstraction of heat, still continue, even the venous blood disappears, all the blood is thrown upon the internal or less exposed parts, and the surface in question becomes white, considerably contracted, or "shrunk up," and quite insensible and motionless. The part is in fact killed for the time, as much as if it had "mortified"—only the process by which the latter state is brought about is usually the very reverse, and necessarily irredeemable. The deadening of a frost-bite is temporary, because it is merely functional, instead of structural. Its danger, after withdrawal of the cause, is, that structural disease, inflammation, and common mortification, will ensue on a too sudden or only partial restoration of vital temperature and activity.

This accident may happen much more readily to some persons than others. It is generally supposed that the degree of cold must be below the zero of our common thermometer (or 32° below the ordinary freezing point of water), in order to freeze a part of a living body. But the length of time the person or part has been exposed, must be taken into account, as well as the state of the system at the time, in regard to food or fasting, clothing and exercise or the reverse, the general plethoric or active habit, and, in short, so many other circumstances, that no general rule can be laid down. One individual may have a limb or member of the body frost-bitten, while those about him, exposed to the same amount of cold and for as long a time, will scarcely suffer at all. Indeed, the person who is said to "suffer the accident," does not feel it after it has occurred, or always know what has happened until he is told of it by others. If, however, it is a foot or hand that has been frozen, he will discover the fact from the loss of voluntary motion, as when the nerves are paralyzed. If heat is not restored to the part, it may be regarded as already in a state of sphacelus; and a sudden restoration, either of external or internal warmth, is very likely to bring on gangrenous inflammation around the part.

Habit, as well as original vigor of constitution, has much to do with a person's power of resisting cold. All know that individuals accustomed to wear gloves, will suffer from exposure without that protection, much sooner than those who habitually go about with their hands bare. I know individuals, living on the shores of our northern lakes, accustomed to wear boots without stockings, all the year round, and to work out in the open air through the winter, handling their ordinary implements of labor, or stones and metals, when necessary, without any covering on the hands.

Notwithstanding the present suspension of vitality, and future danger in the restoration of a frozen part, it is well known that not only small parts or members of the body may be restored to life and health, but that whole limbs which have become white and quite brittle, may recover under a judicious course of treatment.

Though *haste*, in these cases, is more dangerous than *delay*, no time need be lost, after the discovery of the accident. The direct effect of the cold, and the indirect influence of partial death, should not be allowed to continue and extend. Wherever the patient may be, the first and most indispensable measure for his relief can be adopted. The accident never happens but where there is ice, if not snow, within reach. First, then, the rule given by all authorities, and sanctioned by the greatest of authorities—universal experience—is to

Rub the frozen part well with *snow* (where it is not to be met with, smooth ice may do for a while.) It is not to be supposed that the snow has any peculiar virtue in itself—any *mysteriously* homœopathic influence, though I believe my friends, the homœopathists, draw an argument for their great principle from the practice in question. The snow furnishes a mechanically convenient means of applying friction—better than any quite soft body or smooth hard surface. A rough, hard substance would be obviously unfit, from the tenderness, or rather brittleness, of the parts. The hand, which in most cases is the best instrument for friction, would here be too warming. After a while the snow may be laid aside, and the part put into cold water, and there rubbed, first with flannel and then with the hand. All this while the patient should be kept out of any room in which there has recently been a fire, and in an atmosphere not much, if any, above the freezing point. These precautions must be observed, and the means spoken of continue to be used, until the parts become sensible, or feel natural again, which may require several hours of constant rubbing. The patient will generally be thirsty, and it will be well to have him drink freely of cold water. By so doing I have frequently seen persons, who were just before suffering extremely from cold, break out into a warm perspiration, with a genial glow of the whole surface.

By this management, the patient may experience no bad effects from the freezing, farther, perhaps, than a slight swelling of the part, or desquamation of the cuticle as from a trifling scald. In such a case, the part should be treated by soothing applications in the manner directed for scalds. If the part concerned be a limb, it will generally be found, though there is little sensible disease or suffering, to be much weaker for a long time after.

Chilblain or Pernio.

This troublesome affection is a peculiar *atonic* kind of *inflammation* of the skin, induced by partial freezing, or rather by too sudden a change of its temperature, such as warming the feet or hands at a fire when very cold.

At first the skin is red or *purple*, in round spots of an inch or two in size, and somewhat *swollen*, with a severe *itching* sensation, very much aggravated in moist or damp weather. In some instances vesications occur in the center; the skin around continuing to wear the same purple or bluish aspect; at other times the inflammation proceeds to the extent of sloughing. A serous fluid is generally discharged, or the mere swelling may become indolent, when it is very difficult to cure.

Children and very *old* persons are the most liable to this species or degree of "frost-bite," though it depends more on the degree of constitutional vigor than on the mere time of life.

Scrofulous individuals generally suffer most from these affections, in consequence, probably, of their tender susceptibility to cold.

The *treatment* should vary with the stage or character of the case. If the part is ulcerating, make the applications directed for the kind of ulcer which it inclines to become—if the action be *indolent*, use stimulants and compression, or even caustic lotions when needful—if *irritable*, soothing and emollient applications—until the desired change of action is brought about.

But by far the most troublesome cases are those in which *no ulceration* takes place at all. This is most frequently the case where the surface is protected by thick or horny cuticle, as on the ball of the great toe, and the sides or bottom of the foot. When these parts become once affected, the patient is apt to suffer an intolerable itching and burning, not only during the cold season of the year, but still more in fall or spring, when there is much moisture on the ground, and whenever the feet get damp.

Strong *stimulants* are generally found to afford the parts relief. Salt and water, as warm as it can be borne, is a good application. Soaking the parts in strong hot lye water is still better, and generally effectual.

The sufferer often discovers that stripping the feet bare, and holding them for a long time near the fire, till the feet are filled with blood, will soothe his uneasy sensations for a while. But whatever relief be attained by these, or other means, a predisposition to the recurrence of the disease will exist, and it will easily be reproduced by exposure to cold.

LECTURE IX.

ULCERS—THEIR VARIETIES AND TREATMENT.

Definition and division—Boil or healthy Ulcer—Irritable and indolent Ulcers contrasted—Emollients and constitutional remedies—Stimulants and caustics—Varicose Ulcers—Astringents, Compression, Obliteration, etc.—"Specific Ulcers."

An "ulcer" may be defined a *chronic purulent* solution of the continuity of the animal texture.

Ulcers are generally divided by writers into a variety of classes, according to their appearance, progress and effects. The division I have adopted will be sufficient for all practical purposes, though not so minute as may be found in some of the books.

I would have you distinguish then these five *kinds* of *ulcers:* 1st, the healthy; 2nd, the irritable; 3rd, the indolent; 4th, the varicose; and 5th, the specific.

This last class includes a great variety, which will be considered separately, as I come to speak of the diseases or causes which produce them. As examples, I may here mention the scrofulous, the syphilitic, the schirrous and the sinuous (or fistulous) ulcers.

1. As to the HEALTHY ULCER, I may define it *Hibernice,* by saying it is no ulcer at all. It is a suppurative, but not an ulcerating, *i. e.*, destructive process. The pus discharged by it is a normal secretion.

Its *surface* has a florid appearance, without any offensive smell. The *pus* is consistent and easily removed. The granulations are small, and of a uniform size. It *heals* spontaneously and regularly, leaving little or no trace of having existed. Patches of granulations may be *early* noticed, over the top of which is thrown a delicate membrane or cuticle, which finally thickens and becomes true skin.

An example of the "healthy ulcer" is the common *boil*—which, if not an evidence of perfect health, is regarded, and no doubt correctly, as the next thing to it—a successful effort of nature to throw off some slight obstruction or impurity. It may appear on any part of the body, and occasions no difficulty further than the local pain and temporary inconvenience.

Treatment, as every one knows in the case of the boil, is little more than the "let well enough alone" practice: a little *salve* to protect it from the atmosphere, is all sufficient. The only true "healing salve" is that which nature prepares for herself—*healthy pus.* Even this, however, when produced in large quantities, may be injurious to the general health, by being re-absorbed. In that case it should be frequently removed, or the ulcer dressed with some substance that will absorb it. The carrot poultice answers this purpose very well, as it removes the matter without irritating the sore. The simple water dressings are, perhaps, after all, the best that can be "invented." They may be warm or cool—rarely *cold*.

II. The Irritable Ulcer

is very sore to the touch, and easily made to bleed. It generally wears a dark purplish appearance, discharging but little matter, and that of a thin, ichorous or sanious appearance, and sometimes very fœtid and corroding. Its imperfect granulations are spongy, of a dark red hue, or having a whitish vesicular look, appearing at different points, or leaving vacant spaces between them, and often disappearing again by absorption. It is bounded by a sharp undermined (or shelving) edge, sometimes ragged, nearly, what would be called in Botany, "serrated." The parts around the ulcer are swollen and reddened—sometimes edematous.

The *constitutional effects* of this kind of ulcer are often very great, and manifested by thirst, chills and great nervous prostration, as well as irritability. The pain at the part affected, which is often great, is of a smarting or burning character. The worst result is, when the irritable ulcer becomes gangrenous.

The TREATMENT should be the most soothing and emollient possible. Warm poultices will sometimes be sufficient. Fomentations of bitter herbs are often required—those of hops or poppy leaves are particularly suitable. They should be repeated two or three times a day, the ulcer being, between times, dressed with the emollient poultices. One of the best of these is made of the roots of the common carrot, bruised and roasted—or, still better, grated and set in scalding water, and then allowed to cool. If these means are insufficient, lint dipped in laudanum may be added. A poultice, wet with a strong infusion of Lobelia herb, or the expressed juice, will frequently relieve when other means fail. These, or some such applications as these, should be continued till the soreness and inflammatory tendency has gone back. Be sure, when dressing, *never* to *compress* this kind of ulcer, so long as it retains its character of "irritable."

In some instances, after a long continuance of *moist* applications, they seem to lose their power, and the irritability returns. They should then be changed for *dry*. Simple flour will sometimes answer, or prepared chalk, finely pulverized. But the best dry dressing is the powder of the common puff-ball (Lycoperdon bovista).

Dry applications may likewise fail, and it may become necessary to return to your liquids, which may then succeed.

But *constitutional* treatment is after all, of more importance than any local applications, though these need never be omitted on that account. You will generally observe the patient's skin to be dry and harsh; he is also inclined to be thirsty and feverish: as a general rule, the irritable ulcers occur in irritable subjects.

There is plain indication, then, for the *alkaline* bath, which should be used at least twice a day, in connection, perhaps, with the *alcoholic* vapor. An emetic slowly given—our common emetic tincture, for instance—exerts a very marked influence. This should be followed up with mild cathartics. Diaphoretics and sudorifics must not be neglected—such as Ascelepias tuberosa, Gerardia pedicularia, Xanthoxylum fraxineum. I have commonly prescribed an infusion of the ascelepias, xanthoxylum and Ictodes fœtida, as a preparation both sudoric and anodyne.

If the gentler means fail, you must not stop here, but bring out free perspiration, by means of the "alcoholic sweat," and keep it up for several hours, until the irritable condition has been removed.

As soon as this is effected, and the pain in the wound ceases, the former dressings may be removed. You proceed as in the case of a "simple ulcer," guarding against relapse, however, by appropriate constitutional means, such as the Alterative Syrup, with gentle aperients and diaphoretics, and a persevering use of the alkaline bathing or sponging. As a simple alterative in these cases, the Woodbine (Ampelopsis quinquefolia) is one of the best in the Materia Medica. (It should always be used green, as it looses its virtue in drying.) This may be compounded with the Scrofularia marylandica, or the Viburnum prunifolium, or with both.

Where the patient is naturally of a nervous temperament, or where there has been considerable nervous derangement, I consider the common Motherwort (Leonorus cardiaca) almost a specific, especially if he has been a hard drinker. (I have cured severe cases of delirium tremens with it.) You can administer it in the form of a strong syrup—of the leaves. I prefer equal parts of the root and leaves, as the former is strongly diuretic.*

THE INDOLENT ULCER.

is in almost every particular the opposite of the *irritable.* Each can be best studied in contrast with the other. Reverse the definition of the one, and you have that of the other. The *edges* of the sore, for instance, are now *everted*, instead of being inverted, as in the former case; being, moreover, rounded and thick, somewhat glossy and quite regular. The *granulations*, instead of being red and sensitive, are insensible and of a dull pale aspect, with round flat heads, and generally located on the bottom of the excavation: they have, in short, a fungoid character. The pus, instead of being ichorous, is thick, of a dark yellow color, and so firmly adherent to the base of the ulcer that it can not be removed without considerable force, and causing a good deal of pain (which, of course, should not be done.)

This kind of ulcer is the more important, inasmuch as it is the most common form of "sore" which you will be called upon to treat professionally; while it deserves your attention still more, from the fact that it is an affection as rarely cured by the profession generally as any that can be named, not in its nature incurable. *You* must not think of turning off these "hard cases," though you will meet with many persons who have worn their old ulcers for ten or twenty years, and exhausted in "doctoring" all their funds, faith and patience, without the least benefit. If there is in the whole catalogue of human sufferings, any disease in which the superiority of one form of practice over another is plain and palpable, it is

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*This article is not generally appreciated as it deserves. It combines all the properties of alterative, tonic and nervine (or anodyne) in a high degree, with the addition of diuretic power in the root. From my own use of it, which has been very considerable during the last three years, I am satisfied that no practitioner would be without it, if he knew half its value. That its *money value* is little or nothing, is too plainly one of the reasons why it is so neglected. It is too common in all parts of our land to be highly prized, that is, *priced!* We tread it every day under our feet, and send to the antipodes for far inferior things—but *they* are drugs "far fetched and dear bought," and can, of course, be still more *dearly* sold. The same professional prejudice of the *purse* may be noticed in respect to many of our most valuable indigenous productions. For an article on the *Leonurus*, I would refer the reader to the Eclectic Medical Journal, vol. vi, page 117 (December, 1847.)

this: for, whereas the Old School rarely ever effect a cure, the Eclectic practice rarely, if ever, fails.

Indolent ulcers most frequently occur on the lower extremities, and much oftener in males than females (the latter seldom being troubled with them, unless in connection with a varicose condition of the limb, of which I shall speak farther on) .

The TREATMENT of this ulcer, like the symptoms, is the very opposite of that of the irritable ulcer. Let your measures be of the most stimulating kind. The first step is to change the *character* of the sore from sluggishness to healthful activity—to excite the natural restorative action of the vessels.

To remove *fungous* or *callous growth*, apply the mild caustic, keeping it to the part by means of a poultice. This will effect the object and loosen the adhesive pus, so that it will leave the ulcer clean in the course of the first day. It should be washed off with a weakened solution of the same article, or of the bicarbonate (saleratus.)

If the parts around the ulcer be very hard, it may be well to cup and scarify them, and apply a strong stimulating liniment. Hot fomentations will aid very much in this *softening* process. This, with perhaps a reapplication of your caustic once or twice a day, will generally effect such a change, that, in the course of a few days, the sore will assume a healthy aspect and begin to heal. Compresses and *bandages* are very useful auxilliaries. [See next Lecture.]

If you carry your stimulating treatment so far as to change your sore into an "irritable," instead of a "healthy ulcer," the usual emollient treatment will soon bring it down to the healthy standard. All that is then required is some simple dressing, our common black salve, for instance.

When the discharge is very offensive, you can correct it by applying pyroligneous acid for a day or two.

The oil of amber exerts a good influence in bringing indolent ulcers to a healthy condition.

These cases, however, after assuming a promising appearance, are very liable to *relapse*. The tinctures of myrrh and sanguinaria will generally suffice for their restoration. If the milder caustic is not sufficient to keep down the fungous growth, resort to the potassa fusa. After cauterizing, it will be better, for a day or two, to use only emollients. A poultice made of the Indigo-weed (Baptisia tinctoria) may be mentioned as suitable.

If the hardening should assume a *schirrhous* character, a favorable effect may be obtained from the stramonium ointment, or an extract of Phytolacca decandra. The oil of hemlock has been highly recommended, either alone or combined with the tincture of sanguinaria. To make it still stronger, you may add capsicum. These articles make a fine lotion when there is any gangrenous tendency.

For some time past, I have been in the habit, after cleansing indolent ulcers with the vegetable caustic or other alkaline preparations, of putting over them the irritating plaster. By this means I keep up a free purulent discharge for several weeks, occasionally repeating the alkaline wash. I then dress with black salve, applying slight compression. This simple course effects a perfect cure, without any other means except the appropriate constitutional treatment. Perhaps no one remedy is so powerful and effectual as the plaster.

The *constitutional treatment*, however, is scarcely less important, than in the case of irritable ulcers. The alkaline bath should be used once, if not twice, every day. Administer also the alterative syrup, with any other medicine the peculiarities of the patient may indicate, among which will generally be an occasional active cathartic.

VARICOSE ULCERS

are so named, because always connected with a swollen or varicose condition of the neighboring veins. In other respects, they may present the characteristics of either of the other two contrasted classes—may be either indolent or irritable. They are, however, almost always extremely tender to the touch, and often very painful when the part is exercised. The pain indeed is occasionally excessive, and the nervous system may become involved, even to the extent of delirium.

Varicose ulcers seldom occur any where but on the lower extremities, and then only *below the knee*. Nearly all the smaller veins, adjacent to the ulcer, are involved. The reddish brown color of the sore extends to some distance around. The ulcer itself may be superficial, or deep and burrowing.

If a varicose ulcer presents the characteristics of the *irritable*, the first measure of *treatment* is to allay the irritability, by some of the means above directed. If, as is more common, it belongs to the *indolent* class, you will of course make use of the proper stimulants. I have found the application of moderately warm vapor, for a considerable length of time, a specific in many cases of the irritable character. In some constitutions a stream of warm water answers the same purpose.

The only *peculiarity* of *treatment* is that called for by the engorged and enfeebled state of the veins.

Among the means for correcting this condition, is a strong decoction of oak bark or marsh rosemary (Statice limonum), or a strong solution of alum or tincture of galls, kino or catechu; together with stimulants, such as capsicum, myrrh, xanthoxylum, or Aralia spinosa.

In addition to your stimulants and astringents, apply strong *compression* by means of a roller—beginning of course at the extremity of the limb, and carrying it up above the sore, or any veins visibly enlarged, and making the pressure bear equally on every part; or if there is any difference, be sure that it is not greater above than below. [For farther directions in applying the *bandage*, see the next Lecture.]

These measures generally succeed. If they do not, *cup* and scarify the parts, continuing your roller and astringents.

Sometimes the principal *veins* around the ulcer have to be *taken up*. In passing your needle under the vessel, be careful not to wound it. When it is through, coil a waxed thread over it in the form of a figure 8, so as to stop the circulation. Sometimes two of these *dams* are necessary at a little distance apart. Keep up the pressure on the vein, till the necessary degree of inflammatory action for adhesion is brought about. Watch it scrupulously, however, lest you make a new ulcer, as troublesome as that which you are trying to cure. Remove your needles as soon as you perceive the least sign of ulceration.

This *obliteration* of the *veins* by ligature is much recommended, among other authorities, by Mr. Phillips, Surgeon to the Marylebone Infirmary (London.) It is, however, a very painful and troublesome process, and few patients will submit to it. I therefore prefer another mode of effecting the object. Cauterize each vein (with potasa fusa) from one to two inches from the ulcer. In the cicatrix which is formed, the vein is effectually obliterated. You need be under no apprehension about the healing of the *caustic ulcer* (as you must be in that of the ligature). Such a stimulus is given to the part, that it will only require a simple emollient dressing—which should be applied as soon as the parts disorganized by the caustic have sloughed off. Any irritation excited in the surrounding parts must be reduced, before we can re-apply the roller as firmly as before.

[The hamamelis will be found a valuable agent in the treatment of varicose ulcers, both as an internal remedy and a local application. It strengthens the venous circulation, and when locally applied, acts as a gentle stimulant and astringent.]

The *constitutional treatment* should be more or less of what I directed, when speaking of indolent or irritable ulcer, or of what I shall farther indicate in my next Lecture.

Specific Ulcers,

meaning those that result from some specific inflammation or disease, such as scrofula or syphilis, will be fully considered in connection with the disease producing them.

LECTURE X.

CHRONIC ULCERS—"OLD SORE LEGS"—"FEVER OR BRANDY SORES."

Chronic Ulcers — Their frequency and supposed incurability—Description—The whole Limb affected—Treatment of Sore, Limb and Constitution—Local Treatment to be long continued—Old School Treatment—Its deficiency and failure—Bathing and Revulsives—"Ought Old Sores to be cured?"

I can not quit the subject on which I last addressed you (ulcers), without calling your attention to another species of the ulcer genus, which I have taken the liberty of adding under, the truly descriptive, if not very classical name of

OLD SORE LEGS!

That my species is of more importance than any of the others, must be evident, if for no other reason than for this, that it *includes all* the others—the same limb often producing specimens of the indolent ulcer, the irritable, the varicose and perhaps, too, at the same time, one or two in a tolerably healthy condition.

These cases will often be brought under your notice as "*fever sores;*" and as they not unfrequently afflict those who are, or have been, hard drinkers, they are also called, in many parts of the country, "*whisky*" or "brandy *sores.*" Though intemperance, as this name implies, may have been the principal cause, "signing the pledge," or even the keeping of it, will not always be sufficient to obtain a remission of the penalty. Physiological sins are not pardoned on simple repentance. Medicinal means of grace have been provided.

But, unfortunately, the sinners or sufferers lack *faith* in the Old School ministry, and little wonder! They have often gone the rounds of the profession, consulted every doctor within their reach, been treated or maltreated in hospitals and in private hands; and if their general health, which is often tolerably good, escapes *this* great additional danger, the only result is, that they get resigned to their original affliction as well as the disappointment, and can hardly be brought to believe there is for them any "balm in Gilead"—any hope from surgery. Few cases come into our hands that are not of long standing; I have had them ten, twenty, and even thirty years old.*

Although the patient is apparently well, and will tell you that his general health is perfect, he is often more or less. lamed (the ulcers being deep), and suffers much, particularly at night. The chief suffering is from the heated state of the parts, which is so great that cold water affords no sensible relief, and you will often find that, even in the coldest nights, he lies with the limb entirely uncovered. But grown accustomed to the evil, and faithless as to any remedy, the sufferer makes no complaints and calls for no aid.

His cure, however, is not hopeless, though he is past hoping for it. Of however bad a character and long standing may be the case—and though all the "eminent" surgeons and doctors in the country may have failed—*you* need not fail, and will not, if you resolutely apply the course I shall lay down.

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* In one case of *thirty-five* years standing, where thousands had been spent for medical treatment, a complete cure was effected in a little over twelve months.

One peculiarity of these ulcers was alluded to: they are often from an inch to an inch and a half deep. Your patient may suffer much more, however, from the swelling, where there is no open ulcer at all.

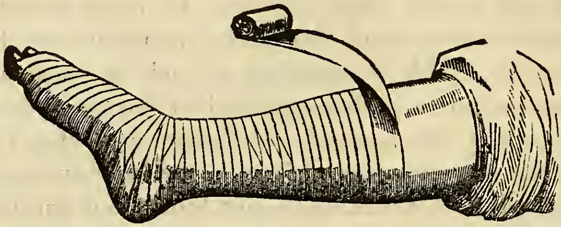
What I wish to call your attention to more particularly—aside from the character of the ulcers themselves—is the *condition* of the *limb*. This is hardened as well as swollen, and in some instances not to be distinguished by the touch from bone. Not unfrequently the patient will inform you that Dr. somebody or other has pronounced it an incurable "enlargement of the bone," and thrown out a pleasant hint about amputation in prospect! Around the ulcers and at other points where ulcers have formerly existed—sometimes the limb all over, from ankle to knee—it is as *dark* as a negro's leg: where the cuticle scales off, as often happens, it leaves a shining, bluish or livid surface, which becomes *white* on *pressure* with the finger.

In actual TREATMENT, the condition of the ulcers must be first considered, though they are in reality of trifling importance, compared with the condition of the limb; which latter requires treatment just as much, whether at the time there happen to be open sores on it or not.

If the *ulcers* are of the *indolent* character, with thick, tough pus adhering to the bottom, hard callous edges turned outward, etc., your first care must be to cleanse them thoroughly. Your best means for this purpose is the mild powdered caustic, filling or completely covering the ulcer with it, and then putting on a slippery elm poultice. This dressing should be renewed as often as every ten or twelve hours. In the course of thirty-six or forty-eight hours, the pus will easily wash off, and the sore present a florid and comparatively healthy appearance; and the *edges*, especially, be much softened. If, on the other hand, there should be any *irritable* ulcers, emollients must be resorted to.

The *whole limb* must be subjected to the vapor of "bitter herbs" and water. The best way is to place it over a vessel, into which the ingredients are put with boiling water and vinegar, steam being kept up by hot bricks, covering the whole with a blanket to prevent the escape of the vapor. (See Introduction.) Keep it up for at least an hour, and repeat the operation once or twice a day. Meantime bathe the affected *limb* with some stimulating wash—one composed, for instance, of the spirits of turpentine, one ounce, and tinctures of capsicum and camphor, each two ounces—sheathing the ulcer from its effects, for a while, by a simple cerate spread on linen. This liniment should be applied each time immediately after the steaming.

Fig. 2.



When these points are attended to, proceed with your most important measure—*the bandage.* It should be about two inches and a half wide. Begin with it at the extremity of the great toe, so as to compress it equally all round. At the next turn include the second toe, and so on with the others, one at a time. Then go on smoothly and firmly all over the foot, first placing compresses in the hollows around the ankle, so as to have equal pressure at every point. Continue to the knee, or should the state of the limb require it, include even the thigh also—one of the principal objects being, you should bear in mind, to aid the returning circulation. Let each layer of your roller overlap the preceding for at least two-thirds of its width. Where the limb is tapering (as just above the malleoli), it will not lie smooth unless you fold it over itself and slightly change its direction at almost every turn. When you have reached the knee, or as high as you wish to go, bring it, in the same manner, down to the foot again, taking care to use no more force than before, lest yuo should drive the blood downward.

I have been thus particular about the *application* of the bandage, because, if you omit it, your other means will probably be of no avail, and if you apply it badly, you may do positive mischief. Any part left constantly uncompressed by unskillful bandaging, will soon become sore, and probably break out in an ill-conditioned ulcer.*

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* It is a curious illustration of the slow progress of improvement, that a surgeon of the London hospitals or infirmaries has recently published a work, in which he advocates this measure as something novel! The editor of the British and Foreign Review takes the occasion of remarking, that, if unknown or neglected in the great metropolitan institutions, it was by no means so in other parts of the country. In this country I know that my colleague, Dr. Morrow,

Take off and *reapply* the bandage every night and morning, *wetting* it thoroughly in cold water each time *after* putting on, and as often as it may get dry. Or the wet roller may be covered again by dry ones, or one of oiled cloth, to prevent evaporation; this may be more necessary at night, the patient's own *sense* probably keeping him attentive to it during the day. If the bandaged limb is dipped in water, take care that it be not kept in so long, or that the water (however applied) be not so cold, as to occasion any sensation of chilliness.

But a short time will have elapsed under this treatment, continued from day to day, before the *ulcers* will have healed; but the *cure* will still be very far from complete so long as there is any hardness or discoloration in the limb. For this reason the same applications should be continued.

If the cure prove *tedious*, change your lotions for others not less stimulating; to which should be added some strong vegetable astringent. The system, or any part of the system, may get accustomed to a particular article, yet retain its susceptibility to others of the same general character. Besides this alternation of washes, I have often treated the obstinate limb with as strong a solution of the caustic (the sesqui-carbonate of potash) as could be borne without taking off the skin, or a very strong solution of the bi-carbonate (saleratus). I regard these alkaline lotions as among the most powerful discutients in the materia medica, for all kinds of indolent swellings. They may be advantageously alternated with a strong decoction of white-oak bark.

After the ulcers have healed, the swelling gone down, and the whole limb has assumed nearly its natural shape and color, there may still remain some hardened *tumors* resembling cartilaginous tubercles, generally about the ankle. These should be *scarified*, so as completely to disorganize them; and the compression and stimulants continued. If this is not sufficient, a caustic *issue* must be made over and *into* each, destroying every portion of the callus. When the cauterized parts have sloughed off, the issue will close up and "leave not a trace behind."

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has been in the habit of insisting on its indispensable importance as far back as 1830, at least. And another distinguished surgeon in the West, Professor Dudley, of Lexington, is well known to have made it quite a *hobby* for a much longer period, the *philosophy of the bandage* occupying quite a prominent place in his course of surgical instruction—to the exclusion, I am told, of nearly all other *local* means.

Sinuses also may resist your ordinary treatment. *Inject* them with a very strong solution of the mild caustic, and push in *tents* charged with the same in substance. If they connect with each other, bring them together by the ligature or the knife. If they are near the surface, cut them open, or cauterize down into them.

Among all your applications, be sure in treating this form of disease, never to apply any *oily* or greasy substance. Such things often cause the ulcers to spread and inflame very rapidly. Most all patients have learned this by experience.

The importance of *long continued treatment* is one point more that I wish you to bear in mind, especially that of *compression*, with *stimulating astringent* washes (as extract of white-oak bark and tincture of capsicum, *aa*). These should be persevered with for several months after all visible traces of the disease have disappeared. The limb, you should remember, has been in a preternatural condition for a long time, all the smaller vessels at least enlarged, the fasciæ and cellular tissue engorged with fluids, and the muscles themselves distended and put upon the stretch. By your treatment you have caused absorption of these extra fluids, and have necessarily left the parts in a very relaxed state, which can best be corrected by astringents and compression. In many cases you must not allow the patient to leave off the bandage under twelve months, after having for some time used it less tightly. And after leaving off the astringent applications, cold bathing should be long practiced. Even when proper constitutional treatment has been used, relapses have occurred from neglecting this attention to the peculiar change brought about in the limb. The patient, when apparently cured, can with difficulty be brought to believe so much "trouble" necessary. But it is your duty to make him *understand the reason* for doing as you desire. Doctor originally meant *teacher*.

A *local treatment*, somewhat like that I have given, is recommended by several standard authorities. Yet the innumerable uncured cases to be met with throughout the country, are so many standing proofs (for they have, almost all of them, been under regular practice at some time or other), that either the recommendations alluded to are not followed by the profession at large, or that the suitable *constitutional treatment* in connection with them has been overlooked. Hence the universal persuasion of the people that though "the doctors" may cure fever, they "can't cure *fever sores*." This may be considered a "prejudice" of little consequence, but it is one as truly *prejudicial* as it is disgraceful to the profession. If the healing art is thus found wanting in small things, how can it retain popular confidence in cases of greater danger and greater *uncertainty*. It is chronic disease, much more than acute, that tests the merit of any practice or practitioner. Hence the steady progress of Eclecticism in all parts of the country. Eclectic Reformers neither fear nor scorn to treat even "old sore legs."

When constitutional treatment *is* resorted to by *old school* practitioners, it is often worse than useless. They are informed, indeed, by one of their greatest American lights, that "constitutional means often [!] exert great influence [!!] over indolent ulcers"—and what do you suppose is indicated as the very best of all "constitutional means"?—"In the wards of the Philadelphia Hospital," continues the professor quoted,* "I have succeeded in numerous instances by the use of *blue pills*, and other preparations of *mercury*, after *most other means* had been tried for months ineffectually." How much, or rather how *little* is implied by this expression, "most other means," we may perhaps guess from what follows: "Where the patient's constitution has been prostrated by intemperance, and other similar causes, the internal use of carbonate of ammonia, wine, brandy, opium, and so forth, will prove of immense service: indeed, in most instances, chronic ulcers can not be healed without the use of such remedies." These eight or ten lines include all the constitutional treatment recognized as necessary by a distinguished teacher in one of the first Old School Colleges in the world! The blue pill and other preparations of mercury, with wine, brandy and opium!! When such a guide is blindly followed by thousands, can we wonder at the consequences to the tens of thousands whose lives and health are at stake?

Opium and *Mercury!*—I find, with astonishment, that the former of these *never-failing* resources is also recommended by Druitt, the author of a much esteemed practical compend of English Surgery. He tells you (p. 85) "to begin with half-grain doses night and morning, and gradually increase to keep up the impression"—as, of course, you must, to a Chinese or urkish extent, and probably never be able to leave it off again, while *it leaves life.* Besides this often fatal *inconvenience,* the article is plainly contra-indicated by the very state of the system assigned as a reason or *excuse* for giving it. We are encouraged to rely on this tempting palliative, because, forsooth, "it acts on the surface!"— as if its certain secondary effects on the surface, when long continued, as in this case it must be, were not *visibly* the reverse of those desired! Who knows not the sear and dried-up skin of the opium-eater?

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* Gibson's Surgery, vol. 2, p. 163.

It is these partial and superficial views taken by surgeons and physicians in general, and inconsiderately presented in practical works, that occasion such frequent failures, and even fatal errors. In the cases in question, the *general surface* is, and has been for a series of years, in a diseased condition, and the system at large is as plainly out of order. Yet opium and mercury are to be prescribed!—the former being certain, in the end, to lessen the healthy action of the skin and other excreting surfaces; and the latter having a direct tendency, when used as recommended, to derange the liver and stomach, and produce, through its constitutional influence, precisely the same sort of local difficulties we are here contending against. What ulcers are so ill-conditioned and intractable as *mercurial ones?*

Not in a single instance do I find any application recommended for the general surface—that most important and most neglected of the health preserving and health restoring organs—no! not even soap and water! Is it then surprising, I ask again, that in these chronic diseases, under Old School practice, the *rule* should be failure, and *cure* the exception? and that, in a large proportion of cases, such doctoring should prove worse than unavailing — positively and grossly mischievous?

First and foremost, then, I enjoin upon you to direct special *attention* to the general *surface.* Make your patient take the Alkaline Hand Bath, night and morning, using brisk friction with the bare hand and harsh towel. (See Introduction, page 7.)

At the end of twenty-four or twenty-eight hours, after the first application of the roller, the patient will usually experience pain, fullness or some disagreeable sensation in the head, with cough, nausea, or perhaps some aching in the limbs. The practitioner should be on the look-out for these occurrences. They are, of course, attributable to the absorption of the large amount of unhealthy fluids so long retained in the limb—which, under the unwonted mechanical stimulus of the bandage, we often find to diminish one-third of its size, sometimes even one-half, in the course of the first day. All this matter, which has so suddenly disappeared, must have entered the general circulation, and produced the disturbance of the vital functions, evidenced by the disagreeable symptoms just mentioned. So soon as they are noticed, therefore, or in anticipation of them, the patient should take a large

—*Hydragogue Cathartic*, composed of comp. powder or Syrup of Senna, and Cream of Tartar, or something similar, sufficient to operate freely from five to ten times. Not the least harm need be apprehended from this purging. On the contrary, it will give immediate relief. It should be repeated, though not to the same extent, as often as *once a week*, for three or four weeks, or more frequently, if any of the above symptoms reappear. By this means, not unfrequently, serous fluid to the amount of from five to ten pounds, is thrown out in the course of ten or twelve hours, carrying with it, no doubt, a large amount of diseased matter; while at the same time such a drain from the circulation greatly increases the activity of the absorbents, thus aiding your local treatment. The patient must also be put under an

—*Alterative course*, consisting especially of such articles as have a direct tendency to increase the *urinary secretion*. For this purpose, I usually prescribe a syrup or strong infusion, composed of equal parts of the root of the Leonurus cardiaca, Scrofularia marylandica, and Aralia hispida (dwarf elder), to be taken, *ad libitum*, at least three or four times a day. Instead of this, you can give the Alterative Syrup, in combination with some active diuretics.

If the patient has been much debilitated by *intemperance* or former *medication*, instead of the foregoing, we first prescribe for a while, Restorative Bitters, or a syrup of Prinos verticillatus and Leonurus cardiaca, *aa.*, to be taken three times a day, half an hour before each meal. I also require the patient to take a draught of *cold, water* the first thing after rising in the morning—at least a common tumbler full. This, besides its tonic effect, will generally

Obviate all costiveness. If not, give the Anti-dyspeptic pills, or small doses of Podophyllin and Leptandrin, or the extract of Euonymus atropurpureus; or, what is still better, a combination of aa. of the Hepatic Powder and Alkaline powder of Rhubarb.

If your patient be of the *scrofulous diathesis*, give him our Scrofulous Syrup. If he is laboring under the *murcurial taint*, the same may be used with advantage, but he should then alternate the alkaline with the acid bath. Common cider vinegar answers this purpose best. He should also be encouraged to *use acids* freely with his food, so long as they produce no derangement of the stomach.

The *diet* should be plain, but palatable and nourishing. *Meat* should *not* be prohibited. I have frequently found that patients restricted to a vegetable regimen sank into an irritable state, which resisted treatment; whereas, on changing their diet, and allowing them more animal food, they were easily cured. All fermented and other *alcoholic* beverages, however, *should* be positively *forbidden*; for under no treatment have you reason to expect a cure, while your patient's blood continues to be poisoned.

I ought not, perhaps, to conclude this subject without noticing an opinion, almost as extensively prevailing as the one before spoken of, that it is of no use to apply for medical aid in these cases, because "doctors can't cure fever sores." It is another popular opinion or prejudice, that if these old sores could, they *should not be cured* This notable idea is often encouraged, too, by professional men!! Is it to conceal their own want of skill, or because they really have seen bad effects follow the "cure" of such cases *under their practice?* But, of course, no *physician* will consider the mere external closure of a chronic ulcer as a cure, while the diseased state of the system which occasioned it, and which perhaps required it, remains uncorrected. Physiology does not enumerate, among the natural emunctories, an *artificial anus* in the leg. The human mechanism was surely constructed to be kept in order without such a safety-valve as *that!* Restore the general health, giving due attention to *all* the functions, particularly the excretory, and there will be *no danger whatever*. Nature will be able to preserve the general system without the sacrifice of any particular part. Nor *need* there ever be any necessity for r-eopening the unfortunate ulcer, or setting up a substitute in the shape of an artificial issue in some other part of the body, as is the practice of some surgeons. The drainage and sewerage of the system are better provided for than they can be by our art.

LECTURE XI.

NECROSIS.

Inflammation and Ulceration of Bone—Common and Specific—"Caries and Necrosis"—Liability—Causes—Constitutional and Exciting—Symptoms—Stages—Diagnosis—"Bone-pus"—Probing—Hectic—Duration and Prognosis—TREATMENT—Preventive and Derivative—Local and Constitutional—Variations and Rationale.

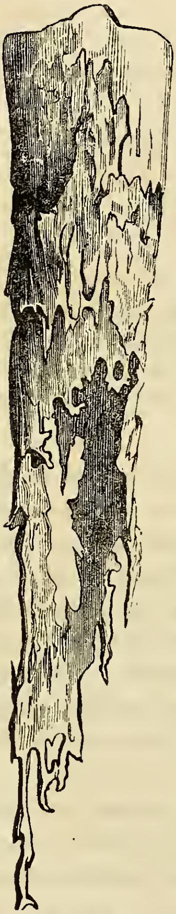
It is an important point for you to know when to meddle with bones, and when to let them alone. Like soft parts, they are liable to get inflamed, and then to suppurate and ulcerate. Their inflammation, though of rarer occurrence, is of much more difficult management and serious consequence than that of most other textures. It is more insidious in its approach, uncertain in its character, and tedious in its course. It is also far more painful and distressing than ordinary inflammations, notwithstanding the complete insensibility of the parts in their normal state.

Bones are not only liable, from the usual causes, to inflammation of a general character, modified by their peculiar structure, but to the various kinds of "specific inflammations," resulting from constitutional disease.

In their healthy state, bones are always hard, dry, smooth, and entirely insensible. Any departure from these conditions is so much evidence of disease.

When destroyed by the ulcerative process, the *reproduction of bone* is effected by a peculiar action of its adjoining vessels. You remember, of course, that bones, like all other living parts, have their arteries, veins, absorbents, and all-connecting cellular net-work. You recollect, also, the interesting process of ossification, or the original formation of bone. Its regeneration proceeds through the same stages. There is first a deposit of "coagulable lymph," then its conversion into cartilage, and then the displacement of the cartilage and the deposit of bone.

Fig. 3.



Necrosis.

"Necrosis" means, in respect to bone, the same as "mortification" in respect to other parts—that is, local "death," the *devitalizing* of the part. In the state called "caries," the bony matter is still living, though, to some extent, disorganized, the disease being confined to the surface, while the inner portion of the bone is sound, the outside being sensibly softer and lighter. *Caries* and *necrosis*, then, have the same relation to each other as gangrene and mortification. They are respectively gangrene or mortification *of bone*. The separation of dead and partially disorganized portions of bone from the living mass — a frequent phenomena of ostitis — is called *exfoliation.*

The liability of different bones to disorganizing disease may be generally inferred from their degree of exposure to exciting causes: first, the tibia and sub-maxilary; next, the humerus and femur. Of the flat bones, those of the cranium are manifestly most exposed. The spongy parts are more liable to inflammation, but less to necrosis, as might be expected.

As to the ages most liable, the period from twelve to eighteen has been distinguished. The sub-maxilary is said to have never been known to suffer from caries before twelve, and very rarely over thirty-five. However, no age or condition is exempt, especially if, with exposure to exciting causes, such as cold and mechanical injury, there be any constitutional taint.

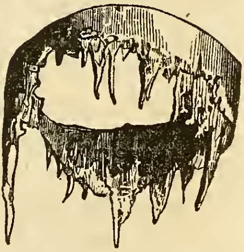
The general CAUSES to be noticed, in our day, are the syphilitic, mercurial and scrofulous affections. Thousands have died from the two former being confounded. The pathogenetic power of mercury has been "proved" on a tremendous scale.

Any cause which prevents the proper nourishment of bone may lead to necrosis, as an injury which simply removes the periosteum. In such a case, great care should be taken to prevent inflammation of the bone, as it will be much more liable to proceed unfavorably than when of "spontaneous" origin.

The SYMPTOMS may be either *acute* or *chronic.* Those resulting from syphilis or scrofula are apt to be of the latter character. Even then, however, *the caries* may assume the character of an acute disease. The truly acute is of course an *occasional* affection, and mostly confined to robust, plethoric individuals.

The appearance of *swelling* in bony inflammation has no regular apex: it is often very difficult, though very desirable, to know where it will "point." Even when it continues to occupy a very limited portion of the bone, it has a round, smooth surface.

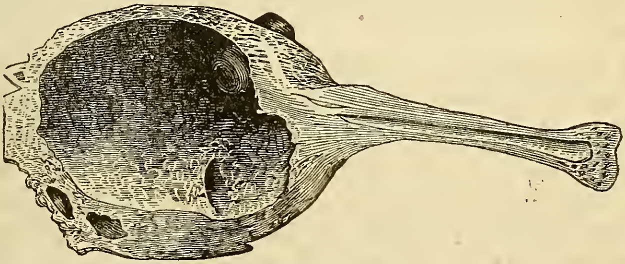
FIG. 4.



CARIES FROM INJURY.

When *pus* is formed in the acute stage, it has more the character of ordinary, healthy pus, than when it is more slowly deposited; but, even in the former case, it soon changes to the dark-reddish, fœtid matter, sometimes described as "sanious," and generally sufficient to indicate its source. If the patient, however, be of a very robust and *healthy* constitution, the change from common to "bone-pus" will not take place so readily.

FIG. 5.



ABSCESS OF BONE.

Bone will not *heal* up after abscess, so long as there is any diseased portion remaining. Hence, when a sore will not heal under ordinary simple dressings, the presumption of necrosis.

There are often fistulous pipes connected with the bone-ulcer, and passing to a considerable distance through the soft parts. Thus, the femur may be ulcerated about the trochanters, and the visible abscess be near the knee, the matter having passed down beneath the fasciæ femoris, or between the muscles, forming a fistulous pipe through the whole thigh.

Pus from diseased bone may be easily *distinguished* by one who has had any *sensible* experience of it; its very offensive odor is quite characteristic. *Touch* is, however, a better test of diseased bone than smell. Apply your finger, whenever possible, or any common *probe*. If the surface of the bone be felt rough or uneven, with loose pieces, the case is clear. If the suspected part of the bone can not be reached, and you are not satisfied from the character of the pus, still continue to examine it frequently; and, if it come from bone, you will always find in it, sooner or later, pieces of detached bone, perhaps not larger than grains of sand. To facilitate this separating process, or exfoliation, as it is called, let the orifice be enlarged. Another diagnostic symptom is the *hectic fever*, with which the patient is always more or less affected. Even the fever which attends the inflammatory stage is of a hectic character.

The disease under consideration is one in which it is important to ascertain the whole *history* of the case, as well as the most remote *cause*. Observe your patient's constitution; question him about his habits; and inform yourself carefully of any treatment he may already have been subjected to: also, as to the character and location of the pain complained of—whether deep seated or near the surface; whether lancinating, throbbing or aching; whether it is worse at night (a characteristic of syphilitic origin); and whether the affection came on rapidly or slowly.

The *acute* disease or stage, is generally from two to four *weeks* developing itself; the *chronic* from one to four *months*—sometimes much longer. If the inflammation be not discussed, and the abscess do not point, in the period assigned for the acute stage, the chronic form is assumed, in which the swelling generally continues, though the pain may almost entirely subside, and the pus not make its appearance for months. If you have only to do with an acute abscess, not involving the bone, it will commonly heal up in a few weeks; but if the bone be seriously affected *fungous growth* is apt to come on, which is alone sufficient evidence of the state of the case. The quantity of matter thrown out from ulcerating bone is sometimes astonishingly great, and at others, very little.

The *prognosis* under *our* treatment, is generally favorable; nearly all cases, even in their advanced stages, being curable without an operation.

In TREATMENT, your first consideration should be to assist nature and avoid all unnecessary interference. Here, as everywhere, *remove causes and obstructions*, and let *nature* proceed with her remedial work; when she is doing well, let well enough alone.

If called in at an early period, before an ulcer has formed, your aim should be by all means to discuss the inflammation, and thereby prevent ulceration, and all risk of caries and necrosis. This may very generally be effected by proper and *timely* measures. I am in the habit of immediately making a deep issue with caustic potash, as nearly as possible over the point where the inflammation first manifested itself. This issue, after the eschar has sloughed off, may be kept in active suppuration by the use of the irritating plaster. This I follow up with discutient fomentations and poultices (such as *lobelia herb*, pulverized and wet with vinegar, to which may be added a little slippery elm to render it adhesive). One of the best poultices I have ever seen applied is made of *white beans*, pulverized and wet with boiling vinegar and water. It seems to exert quite a specific influence in discussing inflammations, especially in scrofulous subjects. I have used this bean poultice in cases where all other means failed, and where the parts appeared to be approaching gangrene, with complete and prompt success. Tobacco has been used with good effect, but it is not unfrequently attended with disagreeable and sometimes dangerous results. The same may be observed of stramonium leaves, their narcotic properties seem to affect *some* patients excessively, others not at all. Fomentations of hops and vinegar, or salt and vinegar, have been used with good effect. A poultice made of the pulp of sour apples is very valuable, especially from its cooling influence. In some cases alkalies and astringents are the best applications at a later period.

While these local means are used, go on with your *constitutional treatment*. It should be that of mild hydragogue cathartics, and at the same time diaphoretics of an anodyne character, (a combination, for instance, of Asclepias, Cypripedium and Xanthoxylum, in strong infusion). The patient should use the alkaline bath, so as to encourage free action over the general surface.

Tonics should be early used, such as a vinous tincture of chamomile, or our restorative bitters, or the wine bitters of Liriodendron, Hydrastis, etc. (Form No. 21). One of the best simple tonics for these cases is the vinous tincture of Prinos verticillatus (black alder).

This course of general and local treatment will usually prevent the *bone* itself from being implicated, though the periosteum be injured; and frequently prevent *exfoliation*, even when the osseous substance is already inflamed.

If this preventive course should fail us, we still gain one important advantage by means of our *caustic issue*. If we have not substituted a conservative and secretory for a destructive process—have not completely changed the incipient *ulcer* into a mere *abscess*, we have at least determined the ulceration to a particular point, and prevented much constitutional as well as local injury. A free exit for the morbid discharge is always preferable to leaving it to mine its painful way out through resisting muscle and cellular membrane.

When a portion of the bone dies, nature attempts to throw it off—it "exfoliates." This process is much slower than the corresponding one, called "sloughing" of the soft parts. It is remarkable, also, that a thin scale of bone separates with more difficulty than a more massive portion. The separation takes place exactly at the point of junction between the dead and living parts, or "mortification." By what means this removal of dead matter is effected, has not been satisfactorily settled; the most probable supposition is, that the healthy granulations push away the dead bones. However this may be—whatever the *rationale* of nature's process, that of our proceeding is plain enough. All rough treatment, all unnecessary handling of the affected parts, flesh or bone, is to be avoided; and the patient put to as little pain as possible in dressing and treatment.

If the discutient course has failed, and ulceration is in progress, keep the *ulcer* freely *open*. When a portion of the bone is known to be dead, lay it bare, by penetrating to it with the caustic potash, if practicable; if not, enlarge the opening leading to it, by a weaker solution of caustic potash, or by the sesquicarbonate and tents. Expose it, as far as practicable, to the action of the atmosphere. If it has separated, remove it, provided you can do so without too much force. Keep down inflammation, by emollient poultices and other anodyne applications.

Should there be *more than one ulcer* or opening, bring them together if possible, by caustic, the knife or a ligature. The ligature is preferable. When you can discover sinuses leading from one opening to the other, introduce a probe armed with *a ligature* into one, bring it out at the other, tighten it, and continue to do so from day to day, till it has cut through.

This is sometimes impracticable, in consequence of the sinus winding through a portion of bone. In this case, make a *caustic issue*, extending from one sinus to the other. I have frequently had to do this along the tibia to the extent of six or eight inches. The bone between the two ulcers is thus laid bare. By the same means, or by excision, you can remove the soft part from over the whole extent of diseased surface, or as far as desirable. If these measures are attended to, together with the application of emollients or local stimulants, the dead bone will soon exfoliate and come away; healthy granulations be thrown out to fill its place, and the disease be "cured."

After having removed the soft parts, as above directed, or if that can not be effected, owing to the irritability of the patient, *inject* into the sinuses a strong solution of the sesqui-carbonate of potash. Insert armed *tents*, also, pushing them as high up as you can; having the same substance inclosed in twisted cotton or flax, to dissolve slowly and act upon the diseased bone, as well as upon the fungous flesh which is constantly forming. This *mild caustic* has a peculiar effect on diseased bone, and seems to exert a stronger influence than the bi-carbonate, or even the pure alkali [caustic potash], without any injury to healthy parts.

If, during the treatment, you discover a portion of *dead bone*, loose at one end and adhering strongly at the other, no violent means should be resorted to for its removal. Simply raise up the loose end and crowd in tents under it, so as to bring a continuous but gentle pressure to bear on it. Increase the strain, from time to time, until the separation is effected.

After you have reason to believe that all the dead parts have passed off, *dress* the ulcer with simple cerate, or what is better, with the black salve. It, however, may not heal readily. This is evidence of more diseased matter to be brought away. Proceed for that purpose as before.

The *deficiency* of bone is soon supplied by a new deposit. The new bone is sometimes formed without the dead part being removed, inclosing it like a fresh *shell*. This occasions a preternatural enlargement of the part. The shelly formation is generally incomplete, leaving an opening at some point, from which pus continues to be discharged. It becomes necessary in such a case, to *remove the old bone*, although nearly encased with the new. This is usually directed to be done by cutting, boring or chiseling through the fresh, sound growth. Such violence is altogether unnecessary, as we have demonstrated in numerous instances. The mild caustic enables us, even in this case, to effect the removal without mechanical operations. The opening is enlarged by caustic potash, sufficiently to admit the solution through a syringe or tube, and tents armed with the same in powder. Renew the application once or twice a day, and in a very short time a free and copious discharge will be established, which should be kept up, by repeating the caustic applications, till every vestige of diseased bone has disappeared. It will come away in considerable masses, when the opening is large enough to admit their passage. When it is too small, a longer continuance of the application will bring it away in smaller pieces, not larger, perhaps, than grains of sand, or even quite dissolved in the caustic. There is carried away, along with it, a considerable amount of fungous, formed probably from the periosteum or medullary substance of the dead bone.

When the inclosed dead bone has been removed from the cavity of the new formation, the latter often diminishes in the outside, while filling up within, even in cases where it has existed for years. More commonly, however, it remains preternaturally enlarged.

The course here directed is preferable to the boring or chiseling operation, because, in addition to its other obvious advantages, it insures a radical cure; while the *surgical carpentery* often fails, from leaving a portion of dead bone, which causes a renewal of the disease, and a necessity for a repetition of the operation, or amputation of the limb.*

PERIOSTITIS.

[Inflammation of the periosteum is sometimes rheumatic in its origin, at others it arises from constitutional syphilis, and in some cases it is the result of cold or of injury. In either case it is a true inflammation, resulting in change of structure; thickening, deposit beneath it, and finally suppuration, most usually next the bone. Being the nutritious membrane of the bone, we find that it occasions disease of that, if its change of structure is sufficient to impair the circulation, or if it is separated by the formation of pus; it is almost always accompanied by swelling of the superimposed parts, which frequently seem to partake of the inflammation.

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*The agent mainly relied on, in the above treatment, is one not generally known in surgical treatment. The mild caustic, sesqui-carbonate of potash, has the peculiar property of dissolving dead bone and destroying morbid growths, without injury, or preventing new granulation. Under its influence the most ill-conditioned ulcers become healthy and heal kindly, though it be daily applied. (See Introduction—Practical Resources).

Symptoms.—The first evidence of the disease is usually a deep seated soreness and aching of the part, which is increased by motion. If extensive and acute, chills and rigors now make their appearance, followed by brisk febrile action, the pulse being especially hard, and the patient irritable and restless. The fever is usually of a remittent form, the exacerbations coming on in the afternoon. In some cases the fever goes down in three or four days, nothing being left to mark it but the slightly accelerated and hard pulse, and deranged excretions. In others it assumes an ataxic or irritative character, attended by many of the symptoms named as typhoid, and running a course of from three to six weeks. In cases where but a small portion of the periosteum is affected, the inflammation being mild, but little febrile action is noticed.

As before named, a sense of soreness and aching usually precedes the chill, when the fever comes up, the inflammation is fully developed; there is a deep seated, tense, contusive pain, sometimes seeming as if the part would be torn to pieces, by some internal pressure. If the bone is superficial, the parts above are involved in the inflammation, become swollen, red and glistening, hot, and painful. If deep seated, as when the shaft of the femur, or the fibula, or posterior surface of the tibia are involved, there may be but little external evidence of the disease. Usually, there is a glistening appearance of the skin, with increased heat.

The inflammation runs a variable course, sometimes rapid, sometimes slow. The symptoms continuing, and usually increasing in intensity, the patient complains of deep seated, throbbing pain, much more severe than that which preceded it, rigors occur, and the patient is much prostrated, indicating the formation of pus. After long and protracted suffering, the pus makes its way through the structures to the surface, and discharging, the pain is much modified. One or two, or four, six or eight weeks, may be consumed in this process, and sometimes resulting in most serious structural lesion of the bone.

Diagnosis.—We diagnose periostitis, by the deep seated aching or tearing pain, increased when pressure is made directly upon the bone. The surface has usually a smooth, glistening appearance, that is unnatural in other cases. Further than this, the diagnosis must be made by exclusion. The deep throbbing pain, extremely severe, with rigors or chilly sensations, determines the formation of pus.

Prognosis.—The prognosis is favorable, except in cases where it is the result of secondary syphilis, and the general health is much broken.

Post-Mortem Examination.—The periosteum is found thickened, and reddened in the early stage of the disease, and there is more or less effusion into the superimposed tissue, and sometimes beneath the membrane, the bone sharing in the inflammation to some extent. In a further advanced stage we find the membrane softened, with purulent formation on its free surface, and involving the adjacent tissue; or it is separated from the bone by purulent formation, and in some cases there is commencing caries, or, in others, death of a considerable portion of the bone. Advancing further, we simply find evidence of disease of the bone, which becomes the permanent disease.

Treatment.—If there is fever, give the patient the special sedatives as heretofore recommended, and a diaphoretic and diuretic. The Asclepias or Eupatorium will answer a good purpose as a diaphoretic, and may be aided by the Diaphoretic Powder of the Dispensatory; the diuretic should be Acetate or Citrate of Potash. To favor the action of the diaphoretic, and for its soothing influence upon the inflamed part, we would use the warm bath, or the vapor bath, and continue it for an hour or two. I have obtained the most marked benefit from the warm bath, as hot as the patient could bear it, continued for four or five hours. If there is much derangement of the digestive organs, give an emetic and follow with the Podophyllin Pill. If there are any symptoms of rheumatism, the

Tincture of Macrotys, with one drachm of Iodide of Potassium, in the twenty-four hours, will be beneficial.

If it is caused by secondary syphilis, I order, ℞. Podophyllin, gr. viij; Asclepin, gr. xx; Extract of Conium, ℨss; Extract of Hyosciamus, ℨj; M.; and make thirty pills, of which one may be taken every three hours, until they operate freely, and repeated daily; associated with this I should give an infusion of Asclepias or other diaphoretic freely, use the warm or vapor bath, and a solution of Acetate of Potassa, to the extent of three drachms of the salt daily. To the part affected, I have never seen a better application than equal parts of the Extracts of Conium and Belladonna, softened with Tincture of Aconite, so as to spread freely on leather; as the disease progresses, the strength should be supported by the bitter tonics and Iron, a free use of stimulants, and rich animal broths, with such other food as the patient can take.

As a local application, the one above named will be found useful in many cases. A poultice or fomentation of a decoction of Poppy-heads, or Hops, or the Polygonum or Stramonium, will sometimes answer a good purpose. At other times these seem to increase the pain, and we have to resort to cold applications. Leeches applied to the part sometimes give marked relief, as do cups to the parts adjacent to that affected. In some cases the pain was so excessive that I found it advisable to make a free incision through the membrane, though in these the bone was superficial. When pus has formed, there is no necessity of waiting for it to point, in fact, in a majority of cases it would be bad practice to do so, an incision should be carried down to the part affected, when frequently with the escape of a small portion of pus, the pain is greatly mitigated. If after this the inflammation continues, it will have to be treated as for disease of the bone.]

OSTITIS.

[Inflammation of the bone occurs most frequently in early life, as at that time the osseous tissue is very vascular, while at a later period the vessels become smaller, and many of them disappear. It most frequently attacks the spongy tissue, though sometimes the more compact, in the first case resulting in ulceration, in the second frequently causing necrosis. It may result from injury, or from cold, and is most frequently met with in persons of a syphilitic, strumous, or rheumatic constitution. It may be acute or chronic.

Symptoms.—The symptoms bear a very close resemblance to periostitis, which increasing for two or three or more days, becomes an intense boring or tearing pain, most exquisite and agonizing in its character. Very soon the superimposed structures are involved, becoming hard, swollen, and of a tense shining appearance, with a slight reddish blush, and sometimes pitting on pressure. The pain is increased by a sudden movement or jar, or by the slightest pressure on the part. This pain continues without intermission, being greatly increased at night, and by sudden changes of temperature; the soft parts become more and more involved, and at last suppurate, the event being announced by throbbing pain, and the accession of rigors. The constitutional symptoms are usually severe, the disease being ushered in by a chill or rigor, which is followed by high fever, and an arrest of the secretions.

The acute disease will usually run its course in from one to three weeks, giving rise to serious structural changes, as softening, caries and necrosis, unless resolution is effected by early treatment. When it terminates as above named, it is extremely tedious, and involves frequently the performance of important operations for the removal of the diseased structure, and in some cases the removal of the part.

In *chronic ostitis*, the disease comes on slowly, and is not attended by the same constitutional disturbance. The pain is deep seated and circumscribed, and of an aching or tearing character. It is usually worse at night and during sudden changes of temperature; if the inflammation is deep seated in the bone, as next the medullary canal, or the center of the cancellous structure of the extremities of long bones, there may be but little evidence of disease externally, except a very slight puffiness, and the peculiar shining appearance of the skin. In other cases, where the inflammation is superficial, the soft parts upon it become swollen, or at least participate in the disease to the extent of suppuration. As the disease progresses, more or less derangement of the general health obtains—the appetite becomes impaired, there is loss of flesh and strength, the bowels are irregular, the skin harsh and dry, and the patient has a peculiar cachectic appearance. In its later stages, there are occasionally marked hectic fever and night sweats.

DIAGNOSIS.—As before remarked, it is impossible to determine between ostitis and periostitis, but as the treatment is similar, there is no special necessity for making the distinction. Chronic ostitis may usually be known by the deep seated and tensive pain, enlargement of the bone, and peculiar tense glistening appearance of the skin.

PROGNOSIS.—Though rarely fatal, the disease does not usually terminate as favorably as we could desire. Going on to suppuration we find more or less of the bone destroyed, and as it takes so long a period for the debris of devitalized bone to be removed, fistulous pipes are formed through the soft structure to the seat of the disease; through them pus with bony debris is constantly discharged, keeping up a continuous irritation not only of the soft tissues, but of the bone itself. Escaping with difficulty, the material may by its simple presence give rise to an irritation that will keep up caries; or, from the change in the adjacent structure, ulceration of the bone may go on; or, parts of the bone may have their vitality destroyed and separating from it, forming *sequestra*, which will continue the irritation and discharge by their simple presence.

TREATMENT.—In no respect will the treatment in cases of acute ostitis differ from that of periostitis. It must, however, be prompt, to be successful. I am a strong believer in the efficiency of the warm bath, or vapor bath, and diaphoretics, and the Podophyllin, as in the formula given under the head of periostitis. If these means are persistently applied, I am satisfied that in a considerable proportion of cases, resolution may be effected. If the disease continues there is but one mode of relieving the intense suffering, and that is, to make a free incision down to the diseased part.

In chronic ostitis we rely principally on alteratives and tonics internally, and counter-irritation to or as near as possible to the seat of the disease. The Compound Tincture of Corydalis, with Iodide of Potassium, or Compound Syrup of Stillingia with the same, are very efficient. Using the last, I would recommend the Podophyllin Pill last named, to the extent of producing one or two free evacuations from the bowels daily. Associated with these, it is well to use a gentle bitter tonic, as the Hydrastis, Cornus, etc., and in some cases combine it with a proportion of wine. If the patient is feeble, a reasonable amount of stimulus may be ordered—ale or porter being the best. Special attention should be paid to the skin, the warm bath being used once or twice a week, and the salt water sponge bath with brisk friction daily. The diet should be nutritious, and to a considerable extent of animal food.

Of local applications, we may use the irritating plaster, or painting with Iodine, or the Belladonna and Conium plaster mentioned on the preceding page. Each of these measures gives relief in some cases, but fail in others. Emollient poultices are sometimes useful, as a decoction of Stramonium, Cornus, or Conium, thickened with Wheat-bran, or the simple poultices of Elm, Flaxseed, etc. Sometimes counter-irritation near the affected part, when it is small and superficial, answers a good purpose. If these means fail, an incision should be carried down to the diseased part, and if deep seated within the bone, it may be carried to the seat of purulent deposit by the small trephine.]

STRUMOUS DISEASE OF THE BONES.

[Tuberculous disease of the bones is not of very unfrequent occurrence, ranking about fourth in the scale of frequency of parts affected. The most common seat of the deposit is the cancellous or spongy portions of bone, being of most frequent occurrence in the vertebra, the short bones of the foot and hand, and the articular extremities of long bones. It occurs only in persons of a scrofulous or tubercular diathesis, marked evidence of feeble vitality being manifest before disease of the bones commences. The deposit is the result of irritation, sometimes from cold or disease of adjacent parts, at others from injury, and it may occur as circumscribed tubercle or as scrofulous infiltration.

SYMPTOMS.—Strumous disease of bones is almost always chronic, and the symptoms vary according to the seat or extent of the deposit. The patient usually complains of a dull, deep seated pain or aching, increased by sudden movement, or anything that causes a strain on the part. It is sometimes but little felt in the daytime when the weather is fine, but is worse at night and when the weather is changeable. If the disease is located in the back, the patient will complain of the back ache, and will relieve the part as much as possible by position.

If of other parts slight enlargement will be noticed, and the pain is circumscribed; there will also be, to some extent, that peculiar white, glistening appearance of the skin which is so prominent a feature in the next stage. Sooner or later, the material will commence to break down, and determination of blood, and a low form of inflammation will be set up. Now the external tissues, in the case of the bones of the extremities, become swollen and hard, the pain increases and becomes tensive, tearing or pulsating. The bone seems to be much enlarged, and the pain is increased by movement or direct pressure upon it. The part has a peculiar, blanched, smooth and glistening appearance that is peculiar to this disease and strumous disease of the joints. Finally, suppuration results, the pus working its way to the surface, being discharged through one or more openings. It is not generally laudable pus, but a watery material, with more or less bony debris, and small flocculi of coagulable lymph or tubercular deposit. From this forward, we have a case of caries, ulceration of the bone, or necrosis. If disease of the bodies of the vertebra has progressed thus far, it may result in the formation of abscess, as in the case of psoas abscess from disease of the upper lumbar or lower dorsal vertebra; or if, as is sometimes the case, the material is re-absorbed, curvature of the spine, from loss of substance of the bodies of the vertebra takes place, with sometimes paralysis from pressure thus induced, or from disease of the spinal cord set up by disease of the vertebra.

Diagnosis.—In nearly all cases of strumous disease of the bones, there will be evidence of this diathesis so plainly marked that it will not be easily misunderstood. Then the slow progress of the disease, evidently confined to the bone, and presenting none of the symptoms of malignant disease or of exostosis, and the blanched, glistening appearance of the surface, is usually sufficient.

Prognosis.—In some cases, tubercles are deposited in bones, and in the course of time are partially absorbed, or so changed as to render them innocuous. Most generally they run the course laid down, the symptoms being more or less severe, according to the part affected. In some cases it is hardly possible for the patient to live through the prolonged suffering and loss of rest, and the exhausting discharge; but in others they pass through it with little difficulty. It almost always results in more or less deformity, and very frequently demands operative interference.

Post-Mortem Examination.—In cases of death from this disease, the bones affected are usually severely diseased. They will be found enlarged, softened, and more or less infiltrated, though the external shell may be somewhat compact. One or more fistulous openings or *cloaca* pass through this to an internal cavity, which is ragged, and contains more or less bony and strumous debris. Sometimes a great part of the structure of the bone is removed, nothing but a simple shell being left.

Treatment.—In the treatment of this affection, our first endeavor is to so improve the general health as to stop the deposit of this material or the progress of strumous osteitis. This is a work of difficulty, but is yet feasible in many cases. I usually put my patients on the use of small doses of the saline diuretics, as the Acetate and Citrate of Potassa, with an alterative and tonic combined, as ℞. Podophyllin, gr. x; Extract of Conium, ʒss; Extract of Nux Vomica, gr. iij; Hydrastin, Quinia, āā, ʒj; M., and make three grain pills, of which one may be taken every three or four hours or two or three times a day. I give the above simply as an example of a combination of remedies that will set the digestive apparatus actively at work, and while promoting excretion, will cause better digestion and assimilation. Usually some preparation of Iron is necessary, and I have found none better than the Carbonate in Catawba Wine. The surface should be bathed every second day with salt water, and the body dried with a coarse towel, brisk friction being used to bring a glow to the surface. A nutritious diet, consisting largely of animal food, and fatty matter, should be allowed, and plenty of exercise in the open air enjoined, if it can be taken without inducing local inflammation. Usually the part will have to be kept so quiet, that it the patient is placed by the window where the sunlight can play freely, or carried out in the open air, it will be as much as can be done.

As regards the local treatment, we may employ any of the means heretofore named that may seem applicable to the case. The irritating plaster is sometimes of imminent service, as in cases of disease of the vertebra; frequently it is not necessary to carry it to suppuration, but in severe cases its greatest influence will not be obtained short of that. A very valuable application is formed of equal parts of powdered Podophyllum and Thuga Occidentalis, or Arbor-Vitæ, made into a poultice with warm Milk; it may be used at any point. The most essential part of the treatment is obtaining perfect rest of the part affected, and this can only be done, in many cases, by the use of splints and other surgical appliances.]

LECTURE XII.

SCROFULA AND RHEUMATISM.

The SCROFULOUS Diathesis, Tumors, Abscesses, and Ulcers—Treatment, general and discutient, emollient, stimulant, or escharotic, according to stage—Mercury and Iodine—Chronic RHEUMATISM, general and local causes—Surgical results—Lumbago, Coxalgia, etc.—Treatment, general and counter-irritant—Plaster and Vapor.

FAMILIAR as we are with this word "scrofula," what is meant by it is by no means a simple thing. It is a generalization. Various morbid conditions, having a certain general resemblance, are thus regarded and referred to as one disease. This similarity, it should be remembered, is not sameness; the things brought together are one rather in our minds than in nature. In cases that we identify as "scrofulous," we have not the advantage of a casual unity, as in syphilis and other contagious diseases. It is, then, a certain modification of the general system, with peculiar morbid tendencies, that is now meant by scrofula. This *general state*, usually referred to as the "scrofulous diathesis," requires to be studied, even more than the *special* "scrofulous *diseases*"—which, for the most part, are obvious enough, presenting no difficulty of diagnosis.

The SCROFULOUS constitution, or *diathesis*, is characterized by a fair and florid complexion, with thin and delicate skin, and generally fine, light hair; a large head (with precocious development of intellect), but a small chest, defective in depth from the shoulders to the diaphragm, with feebleness of the whole muscular system, which is of a relaxed texture and puny development. The neck is thin, the eye and other features large, but regular and well formed. The upper lip especially is very prominent and rosy, the coloring of the eyes generally light. The emotions are vivid, "the social sentiments" generally strong, but the more heroic passions, which impart force of character, are less developed. The intellectual organs are large, and the reflective apt to predominate. There is generally a remarkable deficiency in those portions of the brain which have been demonstrated, by Prof. Buchanan, to be the source of muscular power and force of character, and to be well developed in constitutions of much vital energy—viz.: the basis of the occiput, the region of Firmness, and the occipital organs generally. Hence, the basis of the cranium being often narrow and shallow, the neck is necessarily slender.

The most characteristic peculiarity, perhaps, is the predominance of the lymphatic glandular system. The salivary and lymphatic glands in particular swell from the slightest cold, to which, moreover, the individual is very susceptible.

Scrofulous TUMORS are, however, not confined to the lymphatic and salivary glands. They may present themselves with the same general character in any part of the body. They are most common during childhood. There is at first a simple

Swelling of the part, without much if any pain or increased heat. This may go back, or go on enlarging, until the patient complains both of the preternatural *warmth and compression*, feeling as if something were pressed on the tumor. In this stage it may continue for a long time, and then disappear. More commonly it at length takes on active *inflammation* and terminates in suppuration—the *scrofulous abscess* or running sore. Occasionally it runs through all these stages in a few weeks.

Before the ABSCESS breaks, and in some instances for a long time previous, the *skin* over it becomes of a *purple* or *leaden* hue—which color it will often retain long after healing.

The *matter* discharged in true scrofulous suppuration is of a *thin*, unhealthy appearance, sometimes quite "gleety" and containing occasionally small *solid pieces* of something like cheese. This discharge may continue for a considerable time, without occasioning much inconvenience or undergoing much change, for the better or worse. In other cases, the whole tumor will rapidly be involved in a process of destructive inflammation, being, in fact, converted into a malignant ulcer, wearing a peculiar appearance, which I will describe further on.

When the scrofulous *abscess* is near a lymphatic gland, it not unfrequently happens that the *gland* itself is *unaffected*, except by distension. This may be ascertained by the probe, or by the fact that the tumor does not *soften* or *diminish* in size as the purulent discharge becomes free. The matter thus forming all round it sometimes completely dissects it out; and the gland is then discharged entire.

The large abscesses about the neck, so long well known as the "*King's Evil*," very generally involve several glands at the same time.

The scrofulous ULCER is never very painful unless when irritated by rough handling or some loose portion of carious bone. Its edges are usually overhanging, thin and smooth, and of a pale-red hue. Loose granulations may sometimes be seen at the bottom, of a glossy and somewhat rosy tint. The pus discharged is thin, as in the case of the abscess, but soon becomes offensive. The whole sore, however, when irritably inflamed, becomes fiery red, with a rough, rugged appearance, fungous granulations sprouting up rapidly, with a greatly increased discharge of watery matter.

The CAUSE of scrofula is a very obscure question. As in other diseases, there is a concurrence of many causes. In this case it is perhaps impossible to fix on any one as the principal. As improper nutrition is obvious, bad living has generally been regarded as the principal source of the evil. The prevalence of the disease in this country, however, proves that it is not always brought about by poor living, in the usual sense of the word—by insufficient or innutritious food. Even in Europe it is not confined to the ill-conditioned classes. Aristocratic and even some royal families are not exempt. Although it is undoubtedly to be classed among

Hereditary diseases, it is the tendency only that is inherited. The actual development of scrofula is never inevitable. Hence the utility of preventive medication. The inborn predisposition may, moreover, be very slight or altogether wanting, and the morbid diathesis be *acquired*. We often have to treat scrofulous children whose parents both possess sound constitutions, and whose ancestry, as far as we can learn, have been always free from the disease.

Among the causes, I should give a prominent place to *bad doctoring* as well as bad diet. Mercurialism may be in a large portion of cases the whole hereditary cause. If this be so, and it is the conclusion I have come to from numerous facts falling under my own observation, we need be at no loss to account for the perpetuation or rather perpetual reproduction of the malady in *this country.* I have frequently discovered that the otherwise healthy mothers of scrofulous children, had been mercurialized while pregnant or nursing, and by this means the infant had to suffer the effects of a poison incorporated into its system.

The Treatment

must have reference to four considerations: 1st, The Constitution; 2d, The inflammatory condition or tendency in any part; 3d, The abscesses; and 4th, The ulcerated or perhaps schirrous complication.

To *correct*, as much as possible, the constitutional taint, give the Alterative or Scrofulous Syrup (Forms Nos. 11 and 14); or one I have often made for this purpose—a compound of equal parts of the Rumex crispus, Ampelopsis quinquefolia and Solanum dulcamara (so called, what we get for it being in reality the Celastrus scandens). This preparation taken alternately with the Scrofulous Syrup, seems to have a better effect than the continued use of either of them alone. In connection with one or both of these, *a beer* may be directed as a common drink strongly charged with the sassafras, burdock, and spice bush (Laurus benzoin). The Menispermum Canadense and Aralia Nudicaullis in a strong syrup, is excellent; the Scrofularia may be added to either of the foregoing, or used alone with excellent effect. So also may the Corydalis formosa.

A mild *emetic*, followed up with a mild cathartic, should be occasionally given, during the alterative course. If the patient is inclined to acidity of the stomach, the emetic should be repeated once a week or oftener. If there is derangement of the liver, as there frequently will be, especially if the patient has been previously treated with mercury, use the Hepatic Powders (Form No. 12) in connection with the Euonymus atropurpureus (Indian arrow); or alterative portions of Podophyllin in connection with Leptandrin when there is much debility; or if the bowels are already too loose, the Leptandrin alone.

From late experience of my own and others, I am fully convinced that no alterative or combination of alteratives that we possess is equal to the *Stillingia Sylvatica* (Queen's Delight or Yaw Root), either for the relief of scrofulous disease when developed, or the correction of the constitutional predisposition. I have recently effected cures with this article, as the only constitutional remedy, when the ulceration was very extensive, affecting even the spongy bones of the face and nose. The article may be used as infusion, decoction or syrup, taken three or four times a day, as much as the stomach can bear.

The Saline and Alkaline *Baths* should be used all the time in alternation, one or other every day.

The *diet* must always be nutritious and easy of digestion; all stimulating condiments to be avoided. Never think of restricting to "vegetable diet."

To *discuss* any hardened tumors or enlarged glands before active inflammation or soreness is manifested, apply a poultice wet with the comp. tinc. of myrrh (Form No. 15) and cloths wet with the same applied and covered with slippery elm. In some cases the Discutient Ointment (Form No. 16) may be more convenient. *Strong alkaline* lotions aid much in bringing about resolution.

In threatening or incipient inflammation, make a *poultice* of the Indian Turnip (Arum triphyllum) by mixing the dry powder in warm water; and apply, changing it three times a day. The fresh root finely grated is still better. This article seems to have something quite specific in its influence, speedily removing scrofulous tumors, when very large and highly inflamed. Whatever external means are applied in such cases must be of a *stimulating* character, if you expect them to aid at all in bringing about resolution.

If, however, your means for bringing about resolution should fail, or it is already too late for their application:

If *suppuration* has already taken place, the sooner the matter points to the surface and breaks out, the better for the patient. In order, then, to facilitate this result, apply emollient fomentations and poultices [flaxseed is a good article in this case]. But it is not best to wait for a spontaneous breaking. As soon, therefore, as any point becomes purple or discolored, and you can perceive by the fluctuation that the tumor contains matter, though it may be deep seated, *Open* an *issue* with caustic potash, pressing it in until it makes its way deep into the tumor. Let it enter the cavity, if possible, the very first application. It causes little pain after passing through the skin. At all events, leave a sufficient quantity of the caustic to work its way through. Reapply the poultices as before, continuing them so long as there is any inflammation. After this,

Wash out the *abscess* once or twice a day with vegetable caustic, very weak at first, by means of a syringe, keeping the external orifice open until it fills up from below. After a few days of this alkaline washing, the discharge will assume a healthy character. It should still, however, be kept up for a while, in order to prevent fungous growths and aid the healing process. If you find that the abscess contains

A *lymphatic gland*, loose and surrounded by pus, *enlarge* the *orifice* in order that it may escape, or you may cautiously aid its expulsion by pressure, or even remove it yourself with forceps. After the removal of the gland, the sore will generally "heal kindly." It may, however, still need stimulating alternated with caustic applications. If the sore assume the character of a

Malignant ulcer, persevere with the constitutional measures before recommended, and let your local applications, for awhile, be only such emollients and other antiphlogistics as are calculated to *reduce inflammation and irritation.* Against the latter a good article is a poultice of the Scrofularia Marylandica, with Stramonium and Lobelia herb. After allaying irritation, if there be any

Callous growth, which resists the vegetable caustic, use the caustic potash. Place over the ulcer, also, a salve composed of the roots of Chelidonium or the common Irritating Plaster. This may be occasionally removed, if necessary, and the emollients reapplied. Under these means the ulcer will soon heal, all induration disappearing, unless it be of a

Schirrous character. When this appears to be the case, apply a poultice of Bayberry bark and Hydrastis, using, at the same time, a wash of the comp. tinct. of myrrh. The leaves of the Scrofularia Maryl., also, make a poultice which will frequently effect a favorable change, and which, it may be well to alternate with that first named. If the ulcer is swollen and sore, apply your stimulants. Thus you may use a poultice of Hydrastis and Sumach, to which Myrrh and Capsicum have been added. Should active inflammation, at any time, set in, the poultice of Ulmus fulva with tincture of opium may be applied. If these measures, varied as the case may indicate, should not succeed,

Cauterize with potassa fusa every part of a schirrous or callous appearance. This operation will require a reapplication of emollients for a day or two; when, if the irritation is sufficiently allayed, substitute a poultice of finely powdered Poke root (Phytol. decand.) wet in warm water or in dilute pyroligneous acid, which is an improvement. In a short time the cauterized parts will slough off, when, if there should be anything more of a schirrous appearance, apply a plaster of the inspissated juice of the plant last mentioned (Phytol. decand.) During all this time the sore should be occasionally washed with a solution of mild caustic.

If at any time the part should become distressingly *painful*, the patient may take an anodyne (such as the resin of Cypripedium), and have an anodyne application to the ulcer—such as finely powdered opium in your salve, or cloths wet in a strong decoction of hops, or a poultice of the lobelia plant and stramonium leaves.

If the ulcer have *sinuses* communicating with each other, they should be joined, if possible, by ligature or the cautery, and may require injections and tents of mild caustic [as elsewhere directed].

These or similar means, in connection with the constitutional regimen before recommended, have succeeded in numerous instances, many of which had baffled the skill of the most celebrated practitioners of the old school. It is, no doubt, to the constitutional remedies that we are chiefly indebted, the local means being, after all, merely palliative, and never amounting to a removal of the cause.

In no cases of scrofula do we meet with half as much difficulty as in those where, besides the disease, we have to contend with the effects of previous medication. The worst influences are induced in this form of cachexia by mercury and *sulphur*. The injurious influence of this latter article is not, perhaps, as well known as the former. My own experience is equally my authority for both statements.

Iodine has of late years come to be considered almost as a specific for scrofula—has been *used* as such, at all events, by many of the old school, however they may repudiate the word.

Some preparations of the article have also been approved by Reformers. I must confess that my experience and observations are decidedly against iodine in every shape. I have never known any material benefit in scrofula to result from it, but in many instances the most injurious results have followed. Besides there is no necessity for resorting to an article capable of such mischievous effects, while we have at least equally effectual and certainly safer resources.

[In the treatment of the disease, the indications are to, 1st, improve the quality of the blood and raise it above the point at which scrofulous material is effused, and, 2d, to promote the absorption and elimination of such material as may have been deposited. To accomplish these indications various means are resorted to, according to the condition of the patient. Alteratives are relied upon to a very great extent, and various agents of this class are employed. By some the Compound Syrup of Stillingia and Iodide of Potassium are considered the preferable agents, and are used to a very great extent. My experience has not been favorable to these remedies, and I have been compelled to select others. I now use the Rumex Crispus, Alnus Serrulata, Scrophularia, Podophyllum, Corydalis, and some two or three other agents, sometimes singly, or two or three combined to suit the indications of the case. Acetate of Potash is my main dependence to promote absorption and elimination by the kidneys. I believe it to be as much more efficient than Iodide of Potassium, as this is over Epsom Salts; at the same time employing the bitter tonics, Iron, the Hypophosphites, and Cod-liver Oil.

Very much depends upon getting proper action of the three principal emunctories—the skin, kidneys and bowels. Great care is necessary, however, in the severer cases, not to overstimulate and exhaust these organs. To restore the secretion of the skin, I employ—if it is dry and husky—oleaginous frictions, followed by thorough washing with Castile soap and water; if soft, relaxed and flabby, I use the bitter tonic baths; if there is deficient capillary circulation, with coldness of the extremities, a sponge-bath of dilute Tincture of Capsicum.

As a local application to promote resolution, I have used equal parts of Tinctures of Belladonna and Stramonium, and

Glycerine, or if there is much fever, an equal part of Tincture of Aconite. In other cases, a wash of equal parts of Tincture of Muriate of Iron and Glycerine may be used, or the part may be painted with the Iron, and then followed by the lotion named. In some cases we obtain good results from the use of the Mayer's Ointment or the black salve; finely pulverized Indian Turnip, made into a poultice, is an excellent application. If there is much heat and redness, we may use fomentations of Stramonium leaves, or a poultice of a decoction of Cornus and Wheat-bran. If it is seen that resolution can not be effected, we will employ poultices to facilitate suppuration, and if pus has formed to any extent, instead of permitting it to burrow, we will immediately open the abscess. The poultice may be continued for a few days longer, until the inflammation has passed off, when it may be dressed with Mayer's Ointment, or other stimulant application, until it heals. If it does not discharge well, and looks ragged, it will be best to use a solution of Sesquicarbonate of Potassa until suppuration becomes free. And in those cases in which the healing process is slow and the discharge thin and watery, it may also be employed with advantage.

In some cases the healing progresses until the abscess is nearly closed, but a red, ugly cicatrix is left, from which there is more or less oozing; or if it closes, it breaks out frequently, and after running for a few days again closes, with a thin, bluish cicatrix. These cases are remarkably tedious, and are very difficult to cure. I have treated them by employing the Zinc paste to entirely destroy the morbid cicatrix, and then healing with some mild, stimulating ointment; or, instead of this, we may sometimes dissect the cicatrix out, and draw the parts together with adhesive straps. In other cases, we will find that a decoction of equal parts of Cornus, Rumex and Alnus, continually applied, and taken internally, will in time overcome the disease.]

CHRONIC RHEUMATISM.

Inasmuch as this general affection often *locates* itself, producing states of particular parts that require surgical interference, it is necessary for us to have regard to the general cause as well as special results.

The *remote cause*, as the name implies, is generally an acute attack—rheumatic fever or inflammation. The acute or constitutional affection may, however, be so slight as to be altogether overlooked and forgotten. There may be long continued inflammatory rheumatism of a particular tissue or organ. You are to distinguish between *local* and *general rheumatism.*

The *knee* is a joint very frequently affected. In slight cases there is stiffness and pain only when exercise is attempted. At other times the joint swells enormously, and there is a constant though dull pain. The bone itself seems to grow out, often to a monstrous size. This, however, is seldom more than a semi-cartilaginous deposit, and, indeed, the bony appearance is commonly owing only to condensed coagulable lymph, or to the thickened and hardened condition of the synovial membrane and capsular ligaments. This affection of the knee is often confounded with the scrofulous or true "white swelling." It is most common in the colder regions, particularly in the vicinity of our lakes.

When the disease locates itself in the *hip* joint, it is a variety of "coxalgia," and similarly confounded with the more formidable scrofulous affection of the same part.

Confined to the *lumbar* vertebræ, it often goes under the name of "lumbago." When the *cervical* vertebræ are its seat, it occasions "stiff neck."

Rheumatic inflammation of the *joints* often terminates in a serous effusion, giving rise to true hydrops articuli.

The TREATMENT for stiffness and enlargement of the joints, and for chronic rheumatism in general, must be both local and constitutional.

Evacuants should be used—an *emetic* followed by a *cathartic*—as often as once a week. The bowels to be kept regular, or rather a little loose, in the meantime, by aperients. An excellent preparation for this purpose is the hepatic powder, combined with an equal amount of the alkaline powder of rhubarb, from gr. xx to ʒss. of the mixture being given two or three times a day, or just enough to move the bowels once or twice.

Half an hour *before each meal,* the patient should take, in cold water, from one to two drachms of a combination of the compound tincture of Guaiacum, Macrotys racemosa and Xanthoxylum berries.

The alcoholic vapor bath (see Introduction) should be made use of as often as every third night, just before going to bed.

If there is much pain, it may be repeated more frequently for awhile. But after a week or ten days' treatment, longer intermissions may be allowed, using instead, the rheumatic mixture composed of the oils of cedar, cloves and sassafras, equal parts of each—rubbed on the affected parts.

To the larger joints the Irritating Plaster may also be applied. This application is particularly beneficial on

The Spine, a very critical examination of which should in all cases be instituted. An extreme tenderness to pressure on the vertebræ will often be discovered, sometimes extending from the dorsal region to the coccyx. Wherever any such tenderness is found, apply the plaster. Apply it, if there is lameness of the hip, whether the spine be sensibly tender or not, from the middle of the sacrum to the last dorsal vertebra.

Under a few days of this treatment, lameness, stiffness and soreness of the joints will often entirely disappear, and your patient will express himself cured. But your appliances should always be *continued* for a week or two after the subsidence of the symptoms.

Where any *acute symptoms* exist, the alcoholic vapor may be applied daily.

An excellent *alterative course* in these cases, is the Guaiac preparation heretofore mentioned, alternated with a strong infusion or tincture of the Aster æstivus. This latter article is called in some parts of the country "the Rheumatic weed," from its well known domestic use. Sampson's Snake root is another name for it. It has a strong aromatic odor, and seems to act by its tonic, combined with diaphoretic properties. I have used it with excellent effect in some very severe cases.

LECTURE XIII.

WHITE SWELLING—HYDROPS ARTICULI—AND ANCHYLOSIS.

Scrofulous or True White Swelling, a Suppurating Joint—Symptoms and Progress—Fomentations and other local means—Alteratives—Cure, a work of time—Rheumatic White Swelling, or Dropsy of a Joint—Evacuants, Compression, Tonics, etc.—Anchylosis, or Stiff Joint—Treatment, mechanical or medicinal!—Emollients—Relaxing oils—Extension—Exercise.

This formidable and well-known disease is one of the opprobia of the profession. In the country, indeed, the people seldom think of calling in a physician, with any hope of cure.

Cases known as the "white swellings," are divided by some writers into *rheumatic* and *scrofulous*—the latter being such as occur in scrofulous subjects, and all persons being liable to the former on exposure to the exciting causes. The propriety of such a distinction, for the sake of popular designation, has been doubted; and as I shall speak of chronic inflammation of the synovial membranes and capsular ligaments under the head of "Hydrops Articuli," I will first confine your attention to the proper—

Scrofulous or *true* white swelling, which never occurs in any but scrofulous persons. It is scrofula in a joint. For a long time after the disease has located itself there, the pain may be very slight. Gradually the patient's sufferings increase, and become at last very intense, particularly at night. The central part of the joint seems the point most affected. The *swelling* also is very slow in its progress, except in cases of a very marked scrofulous character. Even then, there is *no discoloration* of the skin, or, rather, it appears whiter than natural, (whence the popular name). It becomes very tense, with a smooth, shining aspect, and marked with varicose veins. The patient constantly experiences a *sensation* of increased *heat* in the part. In this condition the joint may remain for months, or even years, without any material change. Gradually, however, The *tumefaction increases*, till the thickening of the soft parts becomes so hard as to present the appearance of enlarged bone. In very bad cases, involving the cartilages of the knee (for as that is the joint most commonly affected, we may as well study the disease as there manifested), the tibia is thrown *backward*, the condyles of the femur projecting forward. The limb, both above and below the knee, emaciates; and as a flexed position is easiest for the sufferer, *anchylosis* takes place, with the limb permanently bent. Finally,

Matter collects in the joint, either from ulceration of the cartilage or bone, or both, and *sinuses* form for its discharge. Extensive *caries* may ensue, producing

Severe *constitutional irritation*, under which the patient gradually sinks.

Medical TREATMENT is not generally resorted to—at least, a physician is not called, until organic injury to the limb has occurred—until, at least, there is considerable enlargement of the joint, with constitutional debility. As it is then too late to *prevent*, your best means is to

Remove the inflammation and swelling, by cupping and scarifying the whole surface, except any part that may be actually ulcerated. After this, apply the irritating plaster; and on removing the plaster, cup and scarify again, until free suppuration is excited. When this is brought about, still dress it twice a day with the plaster, to keep up the discharge. After each dressing, subject the limb to

The bitter herb *fomentations*, by placing it over a vessel containing hops and tansy, to which may be added, with good effect, the Ambrosia elatior (Roman wormwood.) It is better, also, to add vinegar to the water, the vapor being confined by a blanket. If the re-application of the Irritating Plaster prove too painful, an emollient poultice may be occasionally used instead.

After continuing this course for ten or twelve days, or until pain and swelling have nearly subsided, you may allow the sore produced by the plaster to heal. Then follow up with your stimulating applications and compression with the bandage, as strong as the patient can bear.

If there be ulceration, with one or more *sinuses* opening on the surface, *inject* a solution of the mild caustic. Wash them out freely with this, once or twice a day. This lotion is to be strengthened as the patient can bear it, or until the discharge becomes healthy. After that, wash it out simply with soap and water, and allow it to heal.

Continue to repeat the steaming operation, at least once a day, with stimulants and compression in the interim.

After having cleansed the parts with the sesqui-carbonate of potash, if the bone be not affected, discontinue that article, and use the more active *stimulants* proper, such as the compound tincture of myrrh. The caustic, however, is to be resumed, if there is no tendency to healing, or the discharge at any time takes on an unhealthy appearance. The latter symptom will be reason to suspect

The *bone* to be involved. This can be ascertained by the probe, or by close inspection of the discharge. As long as soft, carious bone, or discharged pieces, can be discovered, the caustic must be persevered with. When these, with all fungous growths, have disappeared, discontinue the caustic and resume the stimulants. The cupping and scarifying may be likewise repeated, should occasion arise.

Some cases will prove very tedious, and occasionally assume, under treatment, a very *irritable* character. All the measures recommended must then be laid aside, except the fomentations and emollient poultices, until the irritation is allayed.

In the large majority of cases, however, the course laid down, or a similar one, will be successful. I am confident that nine cases out of ten may be restored, even after ulceration has gone on for a considerable time; and if it has not already effected the destruction of the joint, the patient will be able to use his limb again. When, however, the cartilages and bones have been irreparably injured, the patient's general health may still be restored. The position of the anchylosed limb can generally be regulated by the timely attention of the surgeon.

In any case, however, of true scrofulous white swelling, a permanent cure need not be looked for, however judicious the local treatment, without the proper

CONSTITUTIONAL REMEDIES—a neglect of which has led to so many failures and to such general want of confidence.

The patient's surface should be subjected daily to efficient bathing and friction, and his bowels regulated and occasionally operated on pretty freely, by the hydragogue cathartic. (Form No. 10.)

The Scrofulous Syrup, or that of the Stillingia, should be constantly used until long after all local disease has ceased. I have given my reasons before for not resorting to any preparation of Iodine. [See under Scrofula.]

The common sassafras seems to exert a very beneficial influence. I have ordered it to be taken at meals, instead of tea or coffee; and have had reason to believe the patients recovered the quicker for its use.

It was observed before, that these are almost always tedious, as well as troublesome cases. It is important that you forewarn the patient and his friends of the necessity of persevering in the treatment a sufficient length of time. In some cases, a cure can not be anticipated in less than half a year; though, in others, half that time may be sufficient. In the most favorable cases, a six-weeks', instead of six-months', treatment will effect the object.

HYDROPS ARTICULI

is a result of rheumatic disease, that often passes under the popular name of "White Swelling," and should, if so called at all, be distinguished as

Rheumatic White Swelling. In this case the synovial membrane and capsular ligament are enormously distended, by serous effusion. It renders the limb stiff, though the pain is slight, unless when aggravated by exercise. The dropsical effusion extends along the tendons of the muscles. The whole limb even may be distended with it.

The same *constitutional treatment* should be resorted to, as recommended for Chronic Rheumatism in general, with addition, however, of more hydragogue *cathartics* and *diuretics*, and these frequently repeated.

The knee, or whatever other joint is concerned, should be *cupped and scarified* over its whole surface, once a day for some time, and a strong stimulating liniment immediately applied. This should be followed by

The bandage, rolled on with a considerable amount of compression, beginning, of course, at the great toe and continuing as I have elsewhere directed,* above the affected part.

The affected limb should also be subjected to the influence of bitter-herb *fomentations*, at least twice a day—the liniment to be re-applied after each fomentation, and the bandage worn in the intervals.

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* See Lecture XI, p. 145.

The whole limb is often dropsical. I have had cases, where in addition to the disease of the knee and leg, the upper extremities, from the ends of the fingers to beyond the elbows, were as full as they could hold. In such a case the same general treatment is to be followed, applying the Rheumatic liniment over the whole swollen surface (Form. No. 19).

If the swelling remain *obstinate*, after the cupping and compression have been tried for some time, get and keep up a free *suppuration* for several weeks, from the whole affected surface, by means of the Irritating Plaster. Then let it heal, and re-apply your stimulants and compression.

This *course* of treatment will generally relieve in a few *weeks*. Few cases will resist, though some will require a longer perseverance in it. In some tedious cases I have had recourse to

Caustic issues about and below the affected joint. I have had reason to think that considerable benefit resulted from the measure.

But the alkaline *bathing and friction* of the whole surface of the body, are of more importance than any other feature of the treatment. Unless these measures are thoroughly carried out, the result will be doubtful: whereas, with this due attention to the general surface, failure is hardly possible. Perhaps there is no form of chronic disease, in which these processes are more indispensable than those involving dropsical effusions.

Hydragogues and diuretics, meantime, are not to be neglected. The patient's strength, if enfeebled, is to be sustained by

Gentle *tonics* and nutricious *diet*, especially lean fresh meats. Proscribe, however, all stimulating condiments. The patient should also be allowed free

Exercise in the open air.

Frequent bathing in cold water may prove beneficial, if properly managed, especially in the convalescent stage. The *internal use* of cold water is also an important adjuvant, particularly a large draught the first thing on rising in the morning. A douche of cold or warm water (according to circumstances) directed upon the knee, produces very fine effects, and is one of my favorite measures.

After the serous effusion has ceased, and all swelling subsided, the tissues of the part are left in a very feeble and relaxed condition, rendering them

Predisposed to *relapse*, which must be guarded against for a considerable time, by the daily application of the *bandage* and of some strong stimulating astringent *lotion*, such as a strong infusion of marsh rosemary, Epiphagus Virginiana, or white oak with tincture of capsicum.

The *stiffness* of the joints that is apt to follow this disease can be gradually overcome by exercise, and the application of some of the animal oils. Rattlesnake oil has been particularly recommended, though caution should be observed in the use of this article, as it is apt to leave the part to which it is applied in a weakened and relaxed condition. The oil of butternuts or of the black walnut may be used instead of the animal oils.

Chronic Disease of Joints.

[Chronic articular disease is always inflammatory at some stage, and very frequently is so at the commencement. Each of the tissues entering into its formation may be effected, but it usually commences in the synovial membrane, or in the articular extremities of the bones. The causes are various; thus, it may arise from an acute inflammation, from rheumatism, from injury, from the common causes of inflammation elsewhere, or from strumous deposit in some of the tissues entering into the formation of the articulation, or adjacent to it. Essentially chronic in its character, it sometimes comes on insidiously, and always runs its course slowly.

Symptoms.—The general symptoms of chronic articular disease are: a gradual enlargement of the joint, with more or less pain, usually of a dull, aching character, but becoming more intense as the disease progresses. A feebleness of the muscles moving the part, and of the joint itself. Displacement of the bones to a greater or less extent, and deformity in consequence. In many cases the joint presents a blanched, glistening appearance, though it may be hot and very painful; hence, the common term, *white swelling*, applied to this class of diseases. The constitutional symptoms are always very marked. As the disease advances we find the patient becoming cachectic; the appetite is poor; bowels irregular; the skin and kidneys fail to perform their functions properly, and there is marked derangement of innervation. Sometimes the effect of the local disease is so severe in the case of the larger articulations, that the patient is soon confined to his bed, from which frequently he does not get up for weeks or months. During this time very many changes take place in the disease; at times severe fever, so that it would seem impossible for the patient to live; again, marked irritation of the nervous system, the patient being extremely irritable and sensitive, and can not be moved without the greatest suffering, and resting badly at night; occasionally almost complete loss of appetite, or very feeble digestive power, being troubled with flatulence, acidity, etc.; or hectic fever of a most persistent character, with night-sweats, makes its appearance, with sometimes tendency to colliquative diarrhœa. Altogether, in cases of disease of the larger articulations, there is a succession of the most adverse symptoms; one appearing when another is removed, that renders its treatment anything but pleasant.

Hydrarthrosis is the most simple of these particular diseases. It occurs most frequently in the young, and is very rare after thirty. It is usually preceded by an injury, an acute inflammation, or rheumatism, from which the part seemingly recovered at the time. Sometime afterward it is noticed that the joint is becoming enlarged, is weak, though still used, and is sometimes the seat of a dull, obscure pain. The distension is sometimes not very great, but at others the articulation is rendered a shapeless mass from the very great accumulation of synovia, which distends the joint most in the direction of the least resistance. As it continues, the areolar tissues become thickened at the parts where there is the greatest pressure. The only change observed after death is the thickening of the synovial membrane, with sometimes softening, and marked enlargement of the fringes of the alar ligaments, sometimes to such an extent that they seem to be fleshy masses.

Strumous Synovitis is diagnosed, according to Mr. Barwell, by the following symptoms. "The swelling is either before pain, or discovered with the pain. Pain being a later symptom as regards visible swelling; yet when it comes on it is constant. The bones forming the articulation are blended by the swelling into one rounded, shapeless mass, which overlies both parts of the joint equally, and conceals greatly or altogether the line of junction between the two bones. There is no preference of place; the swelling is equable over the whole joint. The integuments are not at all, or scarcely increased in temperature."

In STRUMOUS ARTICULAR OSTITIS, "the first symptom is heavy, dull pain, with limping or other imperfection in the use of the limb; this comes on before any swelling is perceptible. The pain is generally increased in bed, and is subject to variations; sometimes quite disappearing for a time, and again returning. The swelling at first is confined to one portion of the joint; for instance, at the knee, the upper where the femur, the lower where the tibia is affected. Afterward, though the whole joint be enlarged, the tumefaction is more marked, harder and larger over the bone primarily affected, and is nearly always on one side of the joint. The division between the bones remain evident to the touch. In all but the deepest placed bones, the integuments over them are sensibly hotter."

The same author lays down the following well-marked symptoms of *caries* and *necrosis:* "In the first, during the formation of pus, the general and local symptoms increase in intensity, and continue to increase even after an external opening has been made. The sinuses are crowned with florid granulations which bleed extremely easily. They are surrounded by thin, blue, contracted skin. The pus is plentiful, thin and irritating. A probe finds the diseased bone surface with difficulty, on account of the windings of the sinus. The surface is rough, slightly yielding, and brittle, though parts give way, it gives an idea of softness. In *necrosis*, where pus forms in the soft parts, and more particularly when it has been let out, the symptoms diminish. The sinuses are crowned by florid, but not brilliant granulations, which do not bleed with extreme ease. They are surrounded by normal or slightly altered skin. The pus is not large in quantity, and is in general nearly laudable. A probe passed along a sinus to necrotic bone finds the passage tolerably straight or simple. The bone is hard, brittle, sometimes movable. Often one may feel the probe pass through a sinuous opening (cloaca) in bone before it comes to the dead portion."

DIAGNOSIS.—The diagnosis of chronic articular disease is usually easy, when the joint is superficial; but difficult when deep seated, as in case of the hip and shoulder joints. The main features of the affection and the symptoms distinguishing different lesions have already been noticed.

PROGNOSIS.—When the synovial membrane is alone affected the prognosis is much more favorable than when the disease commences in the bone. If but little change has taken place in the structures, we may hope to arrest the disease and save the joint. In other cases we may sometimes get a useful limb, but frequently with deformity and stiffness or anchylosis of the joint. These cases are usually tedious, and call for very great care, and the judicious application of remedies to meet the symptoms as they arise.

Post-Mortem Examination. — Dissection reveals various structural lesions, corresponding to the symptoms during life. If the synovial membrane was alone affected, it is usually thickened, more or less rough, and in some cases changed to a pus-secreting structure; the synovia increased in quantity, may be nearly normal, or viscid, or containing flocculi and shreds of lymph, or semi-purulent, or in some cases thick and grumous. Passing beyond this, we find the cartilages eroded or entirely destroyed, and more or less extensive caries of the bone. In articular ostitis, the bone is enlarged and carious or necrosed, with fistulous pipes passing to the surface; in some cases a considerable portion of it is broken down, the site being filled with bony debris and ill-looking pus.

Treatment.—When called to treat a case of chronic articular disease, our first object is to so arrange the part as to obtain most perfect rest. If of the lower extremities it will be necessary to confine the patient to the bed for a period of weeks, or in some cases from four to six months. In addition to this a splint should be carefully adapted to the part, so as to render it entirely immovable, and at the same time make sufficient extension to prevent pressure of the bones from contraction of the muscles. Though joint disease may be cured without these measures, yet it is tedious, and the suffering is frequently intense; and in many cases from want of attention to this point the joint is lost, or the disease terminates fatally.

If the patient is strong, and there seems to be irritation of and determination to the joint, we may resort to an antiphlogistic treatment; as, from catharsis, the alkaline diuretics, the warm or vapor bath with diaphoretics, etc.; but, as a general rule, no advantage will result from it. If there is fever, we remove it by the use of the special sedatives and an alkaline diuretic, the bowels being kept moderately open; and as soon as secretion is established, we may employ Opium to give the patient rest at night if the pain has been so severe as to prevent it. After this, we resort to the vegetable tonics and alteratives to keep up secretion and give tone to the digestive apparatus and entire system. I have obtained the best results from a combination of equal parts of Alnus, Rumex and Scrophularia in infusion, giving a wineglassful four times a day, with from five to ten grains of Iodide of Potash at each dose, and the use of the Iodine and Nux Vomica Pill heretofore named; or we may get an alterative and tonic combined, as in the formula of Nux Vomica, Hydrastin, Quinia and Podophyllin, under the head of chronic disease of the bones. With this, if the patient has no febrile action, I order Ale or Porter, or in some cases Wine, or Rye Whisky and Cod-liver Oil.

Recollect that it is not necessary to give large quantities of medicine, nor to give it where there is no necessity for it. I have treated cases of articular disease in which for two months the patient had nothing but the last named pill to the extent of moving his bowels once or twice daily, and as much Ale as he desired to drink, and yet he was confined to his bed. I have obtained marked advantage from the use of, ℞. Essl. Tincture of Asclepias, ℥j; Hydrochlorate of Ammonia, ʒj; Simple Syrup, ℥iij; M., and give in teaspoonful doses every three hours. It keeps the skin soft and pliable, urinary secretion free, and quiets many of the disagreeable nervous symptoms that are so common. If the pain is very severe and can not be controlled by local applications, we may use Opium or its preparations, but would prefer to get along without them, except as occasional remedies; the other narcotics, Hyoscyamus, Verbascum, Belladonna and Conium, may be occasionally used, but will not be found to be generally advantageous. If the pain is severe in the afternoon and evening, especially if attended with hectic fever, we may relieve it by the administration of Quinia, Prunine or the Essl. Tincture of Euonymus. If there is a loaded tongue or foul stomach, I would use an emetic, getting its thorough action, and following with equal parts of Oxide of Zinc, and Hydrastin, two grains four times a day, in pill or powder, and a solution of Acetate of Potash. I have seen a severe hectic fever and night sweats arrested in this way when all other means had failed, and the patient regain his appetite and commence to recover, the first evidence of amendment dating from the emetic.

As regards local applications, it is sometimes desirable to use none at all, keeping the part perfectly quiet and undisturbed. In other cases the application of a plaster of Mayer's Ointment, made strictly according to the Dispensatory, will be found highly useful; or take equal parts of Rumex and Phytolacca, simmer them in Lard, express, and to each ounce, add one drachm of Venice Turpentine, and half a drachm of pulverized Camphor. These applications are the best I have ever used in cases where the disease was progressing slowly, and the part was not very painful. If painful, I use the Belladonna plaster, or other narcotic applications. When the part is tender and painful, as is frequently the case when we are first called, we may poultice it with a decoction of Cornus or Stramonium, thickened with Wheat bran, and when the irritation has subsided, resort to the other applications named.

In hydrarthrosis or strumous synovitis, next to perfect rest we obtain the greatest advantage from straps. I am accustomed to use any medicated plaster that I think indicated for this purpose, as almost all of them are sufficiently adhesive for our use. I have employed the irritating plaster for this purpose, spreading it on strips of muslin an inch wide, warming and applying so as to make a continuous and even compression. The common strengthening plaster answers well; and Mayer's Ointment, made according to the formula, with Gum Turpentine is excellent. If these are not obtainable, use the common adhesive straps, applying as firmly as the patient can bear without increasing the pain.

In hydrarthrosis it is proposed by sub-cutaneous incision to let the fluid escape into the areolar tissues, from which it will be absorbed, which is doubtless good practice. In other cases, the majority have decided that it is not proper to open the joints in any case, but the minority have shown in numerous instances that it is not only feasible and unattended with danger, but is often the only mode of procedure that will save the structure of the joint.]

Anchylosis, or Stiff Joints.

This may be complete or incomplete. It is the result of disease or injury of the joint.

In *incomplete* Anchylosis the ligaments, tendons and surrounding cellular tissue only are involved. The joint admits of slight motion. In *complete* Anchylosis the extremities of the bones are firmly united.

In TREATMENT, if there be any inflammation or soreness of the joint, remove this by fomentations, cups and scarifying, or the Irritating Plaster, with such constitutional treatment as the case seems to require. The Irritating Plaster is more certain to remove the dull pain and chronic inflammation that attends anchylosis, than any other means of which I have any knowledge. This, however, will be much aided by the proper daily fomentations.

If, after having removed the soreness, the joint admit of any motion, hopes may be entertained from further treatment; but if, on the contrary, it be stiff and immovable, any attempt to disturb it by motion will do harm. It should be let alone.

If the joint admit of motion, *machinery* which will gradually extend the limb, such as Dr. Chase's apparatus (of Philadelphia), will answer for this purpose. While the machinery, whatever it be, is applied to make the extension, absolute rest on the part of the patient should be enjoyed. He must not be allowed to attempt any use of the limb or any other exercise. He should be kept perfectly free from all mental excitement or anxiety, and as much retired from company as possible. As soon as the limb has become straight, or as straight as is thought practicable, all further use of the extending *force* must be discontinued; but the limb should be *kept* in that position until free from all tenderness, if any should have been induced by the treatment.

During the whole time the joint should be bathed in some counter-irritating and relaxing liniment: ℞. Olive oil ʒij, Castile soap ʒj, Spirits of camphor ʒj, Spirits of ammonia ʒij, Oil turpentine ʒj, mix—bathe night and morning. Rattlesnake oil has an excellent effect, though, if used too long, it may weaken the joint for a long time after the anchylosis has been cured. Turtle's oil—I mean that of the Snapping Turtle—has a peculiar virtue. Its long continued use is not so objectionable as that of the Rattlesnake's oil. I have known it to remove anchylosis of several years standing, without the aid of any other means than simple passive motion. It should be applied two or three times a day.

I have known some very bad cases to have been cured by the use of the *liniments* above directed, with the aid of the exertions of the patient at extension and flexion, without the use of any apparatus. In fact such means should always be thoroughly tried after removing the inflammation and soreness, before resorting to any force for extension. After having once extended it and removed all soreness, the patient should gradually begin to use the joint, and increase its use until it becomes strong.

[There is no doubt that very many cases can be cured by friction, and continued motion appropriately used; but some are not benefited. In these it is proposed to forcibly break up the adhesions by flexion and extension, under the influence of chloroform. The practice has proven quite successful in a large number of cases, and may be considered as established. It should not be adopted in persons of a strumous habit, or when there has been suppurative inflammation of the joint.

Having decided to break up the adhesions, place the patient upon a solid table, and give chloroform, to full anæsthesia. Then, having an assistant fix the part above the joint firmly, carefully, with sudden short jerks, or motions, break up the adhesions, and flex or extend as the case may be. When the adhesions are firm, it is recommended not to break them up all at once, but at several times, moving the part in the meantime as much as can be without pain. Some inflammatory action may be expected, but this usually passes off in a short time under the use of wet dressings, and the usual treatment for inflammation].

LECTURE XIV.

THE HIP DISEASE.

DESCRIPTION AND PROGRESS—Diagnosis and Progress—Treatment in different stages—Counter-Irritation and Caustic Lotions—Rest or Exercise—Carved and Gummed Splints—Directions for making and applying Gum Shellac supports—Success of Reformed Practice.

THIS disease, though mostly occurring in weak and scrofulous children, may fall on persons of any age and constitutional character.

The SYMPTOMS sometimes come on so gradually as scarcely to excite attention. Months may elapse before assistance is called for. The first thing complained of is very generally a slight

Pain in the *knee*, no doubt from some implication of the nerves leading to that part. On examination, it is found that the limb is slightly disfigured: it may be increased in length, which occasions the knee to be habitually bent. The elongation itself is usually referred to a partial protusion of the head of the femur out of the acetabulum. May it not rather be apparently increased on account of a relaxation of the muscles, and an inclination of the pelvis toward the affected side? At this period the pain is referred to the groin, or, perhaps to the posterior surface in the region of the trochanter. This pain will, in some cases, be very severe from the commencement, as I have myself observed, and continue so until relieved by suppuration, although many patients do not complain for a considerable time.

The *pus* does not make its appearance till the disease has committed great ravages. Sometimes the head of the femur is entirely destroyed, a large abscess occupying its place, without any tendency to approach the surface at any particular point. It may finally open and discharge at different points about the the hip; more commonly it directs itself to the groin.

The *ulceration* almost invariably injures the joint, destroying the cartilages, if not the articulating surfaces of the ilium and femur. Sometimes the matter may make its way out of the acetabulum without destroying or forcing out the head of the thigh bone, in which case, though there is no dislocation, we may expect anchylosis. More frequently the head is thrown out, and dislocated backward on the dorsum of the ilium, where it may form a new joint, producing in effect a short, deformed limb, though there has been no actual destruction of bone. When the head of the bone has been entirely destroyed, the constant contraction of the muscles will draw the limb up several inches. It is only in *rare* instances that *recovery* occurs spontaneously, the ulcers healing up and the use of the limb being restored, without deformity.

Though a short leg is the frequent result of the disease, it should be borne in mind that its first effect is, generally, as was remarked, to lengthen the limb and turn inward the foot and knee—a sign by which the mischief may be often detected in its incipient stage.

The patient's constitution suffers severely during the progress of the malady. Chills and hectic set in, with occasional night sweats—no doubt from the absorption of pus.

As to *prognosis*, Professor Gibson gives us the following encouragement: "Some patients die dropsical before any important change has taken place in the joint, others perish from hectic in a few months, a still greater number live for a much longer time,[!] a few have been known to survive nine or ten years.[! !] * * Upon the whole, there are few more difficult or *incurable complaints*." [! !]

The *diagnosis* requires notice. When the pointing occurs in the groin it has been mistaken for *psoas abscess!* If the appearance of the matter is not sufficient, a critical examination should enable the practitioner to determine the difference. In the hip disease, the character of bone pus will be noticed, and some portions of carious bone will generally be observed in it. Probing will often be decisive. Force upon the trochanter, so as to press it firmly into the acetabulum, will often excite pain in a very early stage of the disease, before its existence is suspected.

The errors of diagnosis in this disease, even among men who stand high in the profession as surgeons, are most remarkable. I might instance numerous cases which have fallen under my notice within a few years past. One case, that of a lady in this city, whose disease had been pronounced and treated for several months as Psoas Abscess, after regular consultation with the Professor of Surgery in the Medical College of Ohio, is reported by Dr. Morrow, in the Medical Reformer. It was treated *by him* for hip disease, and cured. A few weeks since, a son of Col. Florence, of Pickaway county, in this State, was brought to consult the same distinguished Professor, who agreed with the country physicians who had been long treating the case as a rheumatic affection *of the knee*, and decided that amputation of the thigh was the only remedy. On seeing the patient, Professor Morrow at once inquired of the father what had been done for the hip, and learned that any disease there had never been suspected. A touch of the finger upon the trochanter, pressing toward the acetabulum, produced excruciating pain, and more extended examination displayed all the well-marked symptoms of the Hip Disease—which was, no doubt, the original cause of the trouble in the knee, and would certainly have been little benefited by amputation. I make these statements for no invidious purpose, nor by any means as *singular* occurrences, but to aid and *strengthen* your judgments, seeing that men of such standing and long experience, are liable to oversights so serious. I have had two cases of *club-foot* produced by coxalgia, and removed by curing the *hip*.

Your first TREATMENT, if fortunately called to a case in the early or *forming stage*, should be directed to *arrest* its destructive *progress*. For this purpose, immediately apply the Irritating Plaster over the diseased hip—covering the sacrum and extending over the side as far forward as the front of the trochanter. It should extend behind, from near the coccyx up over the last lumbar vertebra (so as to cover all the spine giving out nerves to the joint).

This plaster should be continued, so as to keep up a free purulent discharge for a month or six weeks; or, after the first application of the plaster, the discharge may be kept up by two or three caustic issues, at different points about the hip, occasionally re-applying the plaster.

As in all cases of chronic disease, *daily bathing* must be strictly attended to. Cold or warm water should be chosen, according to the particular condition of the patient.

An active hydragogue cathartic, composed of equal parts of the Comp. Powder of Syrup of Senna and Cream of Tartar, should be taken as often as once a week—the bowels, in the meantime, to be kept open by small doses given daily, not so much, however, as to disturb the stomach or affect the appetite.

Some *alteratives* will always be necessary—generally the Scrofulous Syrup (Form No. 14)—in connection with an infusion of the dwarf elder (Aralia hispida), as a common drink, throughout the treatment; the patient may use an infusion of the root of the Scrofularia Marylandica, or, as something perhaps more palatable, "a beer," in which that article, burdock and green mullein leaves are ingredients (the object being to keep up a pretty free diuretic in connection with the cathartic effect).

The foregoing course of treatment is abundantly sufficient to counteract the disease, and restore health, if the suppurative process has not already advanced too far; but if *matter* has *formed*, and yet not made its way to the surface, make use of *poultices* and *fomentations* over the whole hip, till there appears a tendency to point at some particular place. At this place open a caustic *issue*, to facilitate the exit of matter as soon as possible. So far from apprehending any evil consequences from the freest escape of matter, I regard it as an essential condition of any successful treatment. No one, certainly, can point out any good result from the retention of a large amount of pus in the system. Its *absorption*, if we could insure it, might occasion as much mischief to the constitution of the patient as its presence is now doing to the part. But to bring about absorption would be a very difficult matter, inasmuch as the absorbents, in common with the rest of the system, are by this time much debilitated.

If, however, the matter seems to be rapidly approaching the surface in a natural way, apply your emollients, and wait patiently for a spontaneous opening. As soon as this occurs, or if there is, when you are first called,

A *free discharge*, encourage it with poultices, adding more anodyne applications if there be much pain or irritation. Also, wash out the abscess freely, once or twice a day, with injections of soap-suds. You must also apply, in this stage of the case, the Irritating Plaster all over the hip, in the manner before directed, leaving, however, a small space uncovered at the orifice or orifices of the sore, which may thus be dressed with something more soothing (as simple cerate), and the dressing changed, and lotions applied, without having to remove the plaster. Let this counter-drain from the whole neighboring surface, as well as the discharge from the abscess, be continued until the latter *fully* heals up. If the large plaster prove *too* "irritating," replace it occasionally with a slippery elm poultice, until the soreness is sufficiently lessened to bear a re-application of the plaster. After a few days, increase the strength of your

Wash, gradually dissolving in it, in addition to the soap, more and more of the mild caustic. This will soon destroy and bring away all fungous flesh or carious bone, and stimulate a healthy restorative action in the part. Owing to the excessive irritability of some patients, the cure will proceed very slowly. You may not, at first, be able to inject oftener than once in two or three days. Repeat the operation, however, as often as the patient can bear it. Should there be several

Fistulous Openings, each is to be treated in the same manner with stronger injections and caustic tents; and, if they are connected, introduce a ligature, and, if practicable, bring them gradually together.

In case of great *debility,* tonics should be resorted to—such as the Restorative Bitters—taken for a week or two at a time, instead of the Scrofulous Syrup, which is afterward to be resumed. With due regard to the patient's strength,

Attention should be also directed to the *bowels.* Let the *diet* be of the most *nutritious* but unstimulating kind. Be sure never to carry your purging so far as to debilitate.

Rest is another important adjuvant. Let the affected part be moved as little as possible. I am far, however, from sanctioning the routine recommendation, of keeping the patient confined for several months to his bed. The depressing, and even *irritating* effect of such restraint in a young and otherwise lively patient, more than counterbalances all the advantages of inaction to the affected part. On the contrary, I take the responsibility of advising, with proper precautions.

Exercise in the open air. For this purpose, the patient must be supplied with a *crutch* or crutches, the affected limb being so secured as to allow as little mobility of the joint as possible. If no dislocation has yet occurred, a suitable *splint* may answer the purpose. The "carved splint," to fit the patient from chest to foot, so highly prized by Dr. Physic, is still insisted on by many surgeons (some writers taking particular care to require that it be made and exactly fitted by a professed carver). But any wooden splint, however neatly made and fitted, is too heavy and burdensome for a young patient, to say nothing of the fact, which professional *authors* so generally leave out of sight, to the great embarrassment of actual practitioners—that most families have not an inexhaustable purse to draw upon. The expense of the required "carved splint" would be enormous, if changed, as it would need to be with the progress of the disease, every month or two. Happily, however, at least for all but the wealthiest, for whom alone some medical men seem, *in their works*, to prescribe,

A far *better splint* can be made with little trouble and comparatively no expense, one that is just as firm though much lighter than wood, and fitting *exactly* to the limb and body, as no carved work ever can. Get a piece of thick woolen cloth, (old will do as well as new), and saturate it in a solution of *gum shellac* (1 ℔ to a pint of alcohol, see Appendix). Expose it to the air, and when the menstruum is evaporated, your cloth will be almost as firm and elastic as steel. Two sheets, however, may be welded together, by covering again one side of each piece with the dissolved gum, by means of a common paint brush, evaporating as before, and then pressing them together with a hot flat-iron or tailor's goose. Three or four thicknesses of heavy woolen cloth thus prepared, will be as strong as any splint ever required for any surgical purpose whatever. Have your prepared material nearly of the size required, and then heat it at the fire or by dipping in scalding water until it is as soft and pliable as the original cloth. In this state, or after it is cool enough not to burn, you can with two or three assistants, apply it to the parts, and fit it exactly by pressing it down closely to the surface, where, in the course of two or three minutes, it will stiffen. It will always retain the shape thus given it. No heat of the body can ever be sufficient to soften or weaken it. It should, however, be lined with canton flannel, or some such material, to prevent its irritating the surface, such lining being fixed by a weaker solution of the same article or common Gum Arabic.

This *shellac splint* should extend from above the middle of the thorax to the ankle, reaching half way around the limb, and above nearly to the spine and sternum. It should be attached all the way by rollers or bandages, applied moderately tight. It will bear being pressed on the surface much more tightly than any other material less accurately fitting. Should the thigh or leg be flexed, no force should be at first used to straighten it. The splint must be *adapted* to the limb in its *easiest position*, and re-fitted as often as the position of the limb changes.

With such a splint, so fixed, almost any desired amount of proper exercise can be taken, without risk of exciting the affected joint. Holes may be made in the splint to allow us to dress the opening of the abscess or ulcer, so that the apparatus need not be removed, except when the irritating plaster is to be changed.

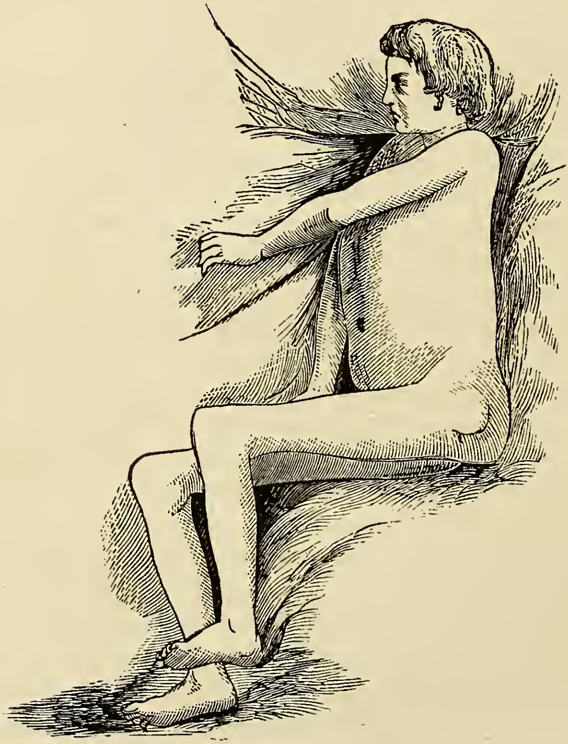
In adjusting the splint care must be taken not to apply too much pressure about the hip while it is still sore or painful; but when the disease has become more chronic and indolent, slight pressure, equally applied, is decidedly beneficial.

When the head of the femur is protruding, but not yet entirely dislocated, judicious *pressure upon the trochanter* may serve, in connection with the active revulsives directed to restore the bone to its natural position, and the patient have the use of his limb again. But most generally where there has been any degree of dislocation, and much suppuration, no other result can be anticipated than anchylosis or a locked joint. This is worse for the patient than when the head of the bone is thrown out of its socket, without other injury, as it then forms an artificial joint, allowing a certain use of the limb, though with shortening and deformity.

[Diagnosis.—The history of the case, considering the symptoms as already detailed, will generally be sufficient to establish a correct diagnosis. Neuralgia and rheumatism have been mistaken for the disease, yet if they be carefully studied, testing the sensitiveness of the articulation by concussion, and estimating the causes of the peculiar position (see Fig. 6) assumed by the limb and pelvis, no failure can be made in coming to a proper understanding of the complaint. Those who have little experience with hip-disease may for a time be misled by an acute abscess in the vicinity of the joint, yet little harm could result from such an error, beyond the distressing apprehensions unnecessarily created in the mind of the patient or his friends. In very rare instances, a separation of the head of the femur from the neck of the bone, either by fracture or simple diastasis, has been mistaken for morbus coxarius.

Treatment.—In regard to the best plan of treatment for hip-disease, there is among surgeons much difference of opinion. Not a few of those who claim to be particularly progressive in their ideas, say that patients laboring under the affection in question, should be driven on crutches into the open air, declaring that their only hope was in food and exercise. That sounds very well, and the course is particularly agreeable to those who know nothing of the disease, except that is is unpleasant to treat, and rarely terminates in perfect recovery. But there is a "best" plan of treatment for this affection, and that must be based upon sound pathological views. To send a patient into the street on crutches, when he ought to have his limb quiet and under the influence of extension and counter-extension, to overcome the pressure upon inflamed surfaces, is a highly censurable and summary manner of disposing of a case. Occasionally a patient will recover while crutching about with the

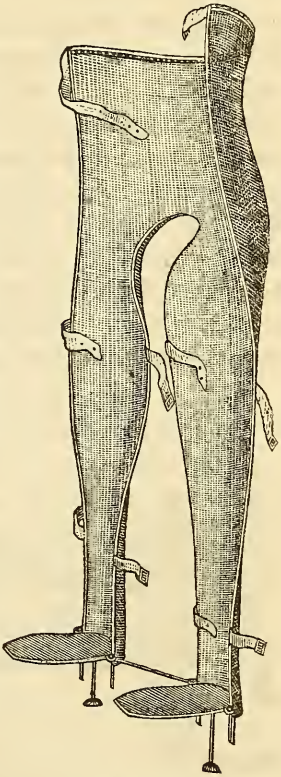
Fig. 6.



Position of Limb in Hip-joint Disease.

greatest freedom, yet where one recovers, ten are at length brought to the bed from which they never rise. Hip-disease is more local than constitutional, and must be treated accordingly. In the early stages of the disease powerful anodynes should be applied to the region over the joint, to prevent the affection from making progress, and to give the irritated nerves an opportunity to rest. Pain of a long continued and severe character will wear out any patient. To overcome the distortion that has already taken place in the pelvis, an apparatus like the one represented in the diagram should be used. It is made of woven wire, having its border bent over and soldered to give it firmness. The material should be of sufficient firmness to prevent it from warping, and accommodating itself to the deformity of the body. It is shaped like the posterior half of a pair of pants; and on that account has been facetiously styled the "wire breeches." Two movable foot-pieces are connected with the leg parts, to which the feet of the patient are to be lashed, and extension made upon them by means of thumb-screws. The counter-extension is principally made upon the tubera ischii and the parts against which the upper end of the "breeches" rest. A space is left at the bifurcation of the apparatus, to allow fecal evacuation, without disturbing the position of the patient. Before the instrument is applied it is to be well lined with soft cloth or batting. It is essential that the apparatus be well fitted to the patient. A plaster of aconite, or of the extract of belladonna, should be kept next to the skin, covering the affected joint. In case the fluctuation is pretty distinct, and the articular tissues seem to be distended with fluid, a slender trocar and canula may be used to evacuate the parts.

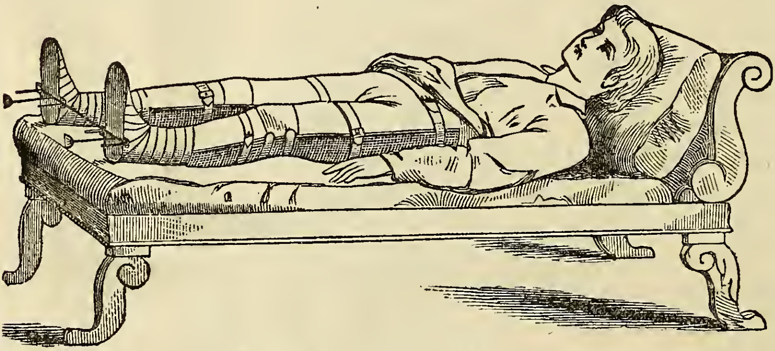
Fig. 7.



Wire Breeches.

The use of the evacuating instrument every few days, until there is a subsidence of the fluid accumulation, is decidedly serviceable. When the trocar is inserted the surgeon should consider the position of the large vessels and nerves that they may escape a lesion. The usual place to make the puncture is a little above and posterior to the great trochanter. Instead of a trochar, a slender bistoury, or tenotome may be employed to make an opening into the joint. Using either instrument the capsular ligament must be punctured, when it has not already been perforated by the morbid processes. After the puncture has been made, the limb may be rotated, especially inward, to force out the fluid. This having been well done, and the wound covered with the belladonna or aconite plaster to prevent the air from freely passing into the articulation, and keep in check any inflammation that might be excited by the paracentesis, an anæsthetic should be used to obviate the pain. The operation having been performed, the patient is to be replaced in the wire apparatus and retained there constantly until another tapping of the joint is required, or recovery is so far advanced as to render it safe to exercise the limb a little. Under the influence of such local treatment, and the internal exhibition of stimulants, anodynes, arterial sedatives, or tonics, as the symptoms of the case require, the patient will steadily improve. The slight shortening of the limb which is likely to result in many cases, even with a favorable termination, may be remedied by the use of a shoe, which has a correspondingly high heel. The stiffness of the limb, which is caused in part by the organization of plastic lymph among the tissues in the vicinity of the joint, and sometimes within the capsular ligament, is in many cases to be let alone, at least until it be ascertained whether

Fig. 8.



Application of the Wire Splint.

the motion of walking diminishes the difficulty. If it do not improve by use, and false bands seem to be the entire impediment, the patient is to be prepared by anæsthesia, and then the limb flexed, extended, abducted, and rotated with sufficient force, of a sudden character, to break up the fibrous adhesions. The patient should then be put in the wire breeches, where he is to remain until all active inflammation has subsided. Passive motion is to be practiced for a few days preceding attempts at walking. So great advantage has been derived in such cases from the rough manipulations of "natural bone-setters," in their unscientific endeavors, that the notion is quite prevalent that the reduction of an old dislocation has been effected.

When a very bad case of hip-joint disease is presented for treatment in its advanced stages, several fistulous openings existing, which discharge the products of caries, the patient rapidly sinking in spite of the best management that can be devised, *re-section* is the alternative. This severe and dangerous operation should not be resorted to, however, until the internal use of cod-liver oil and phosphates have been thoroughly tried, as well as such supporting treatment as the peculiar symptoms of the case demand.

The old plan of using leeches and other depleting means, and counter-irritants in the form of plasters, moxas, setons, and cauteries, is falling into merited disrepute. When a derivative agency is used, the common irritating plaster is, in a majority of instances, the best, but it has its objections. The actual cautery has been highly extolled, yet it is an unmerciful agency, and often fails to produce any satisfactory result.

The long splint, reaching from the axilla to beyond the bottom of the foot, has been employed in connection with extension and counter-extension, with very happy results. A double splint, a piece to go on each side of the body, and connected by a cross-piece at the lower end, answers a very admirable purpose. With this the same mechanical principles can be brought to bear, that render the wire apparatus so valuable. The latter, however, is easier to be worn, the counter-extension being so well distributed upon those parts which are used to pressure in sitting.

Before dismissing this subject, it may be well to mention that a patient should not be declared well, and discharged too early. The tendency to a return or continuation of the disease often exists, sometimes after apparent convalescence. The second attack in time subsides, with as much probability of a third, as there was for the preceding. I know a young man who has been through three or four attacks, two or three years coming between each, the patient and the medical attendant congratulating themselves as many times upon the prospect of recovery. This tendency to relapse seems to be favored by a scrofulous condition of the tissues about the joint. In one case, where a third attack threatened, severe symptoms were obviated by the administration of chalybeates, and large doses of the phosphate of lime, together with the arnica plaster applied to the parts covering the articulation. It is essential that the patient's bowels be kept open with laxatives, both during the cure and afterward, as a preventive of a subsequent attack of the disease.—Prof. A. J. Howe.]

LECTURE XV.

LUMBAR OR PSOAS ABSCESS.

Origin and early Symptoms—Secondary Symptoms and Diagnosis—Matter to be all let out—By Puncture or Caustic—Dressings and Injections—General Treatment Essential, not mere "anti-phlogistics"—Necessary Measures—Baths and other Alteratives—Importance of Counter-irritation over the Spine—Preventive means.

The most formidable affection of its class (that is to say, of phlegmonous disease not directly affecting vital organs) is another of the opprobria of ordinary practice—the terror of both patient and physician.

Lumbar abscess sometimes shows itself suddenly and runs quickly through its course. Usually, however, it is *slow* and insidious in its *progress*. It is even said occasionally to take years in coming to maturity.

The *suppuration* generally commences in the sheath of the psoas muscles, *high* up on the spine near their origin, and runs down along their course *over the pelvis*, at various lower parts of which it finally points, most commonly in the "groin," just below Poupart's ligament, near the insertion of the psoas magnus into the femur. Occasionally it opens into the rectum, or in the case of females, into the vagina.

The early SYMPTOMS are, a dull, heavy *aching* in the *lumbar region*, occasionally extending down the outside of the thigh, and in some instances, to the foot, causing lameness of the limb—a drawing up of the *testicle* of the affected side, with more or less pain along the spermatic cord—speedy *fatigue* on taking exercise, and general locomotive dullness. When he lies down, the patient is disposed to *flex* the *thighs* upon the abdomen, to take off all tension from the affected muscles.

A sudden CHANGE takes place after a while, and very *different symptoms* occur. Those just mentioned may have continued stationary, and the patient grown accustomed to them, or been gradually aggravated, the local *pain* becoming at last more *throbbing* and intense. The appetite fails, the breath becomes foul and fœtid, *chilly sensations* are experienced, and, not unfrequently, night sweats occur, with other accompaniments of *hectic*.

The *swelling*, which usually appears in the region of Poupart's ligament, may be at first mistaken for hernia. It is caused by accumulation of matter in the cellular tissue, which often works its way round toward the rectum. Sometimes the matter passes down by the urinary bladder and makes its appearance in the perineum, or it may affect the bladder and open into it. The character of the swelling may be known by its fluctuating, particularly when the patient lies down. If he continue the recumbent posture, it will recede. When he stands up, it is much more tense and firm. When he coughs, the tumor suddenly enlarges, as if blown up with air. These peculiarities constitute the

Diagnosis from *hernia;* but the hectic fever is perhaps the clearest criterion, that not being necessarily nor often present in the latter disease.

When the *vertebræ* are affected, the result may be curvature of the spine, or even loss of the locomotive function. Such cases may be confounded with original spinal disease.

No special *cause* for the occurrence of abscess in this particular part is well ascertained. It happens, most commonly, in persons of a scrofulous diathesis.

TREATMENT.

The first direction I will give you is—as soon as the fluctuating tumor is discovered, to *puncture* it and *let out the matter.* But be well assured of the nature of the tumor. I once knew a physician, who punctured a hernial tumor for lumbar abscess, and killed his patient.

A better plan, where the patient is not in too great danger from the absorption of pus, is, to poultice for awhile, and then make an *issue,* with caustic potash, where the pus appears nearest the surface, or at the most depending part, if there is any choice. If the collection is below Poupart's ligament, make your opening near the insertion of the psoas muscle, so as to enable you to drain off all the matter. Let your artificial issue be large enough to allow the matter, as well as your injections, to flow out freely. A small orifice may give trouble, by closing again too soon.

Should the *pus* lie *deep,* no means will be safer and tend more to bring it to the surface, than the caustic issue. It may enable you to gain much valuable time. After applying the caustic, the elm poultice should be constantly used. After having the abscess open, drain off *all* the *pus*—whether you have punctured, or let it open spontaneously, or aided the efforts of nature by caustic—in all cases, let the matter pass out freely. Assist it by compression, as far as you can, along the course of the muscles, and by a slippery elm poultice over the opening, the latter being frequently changed, so that it may not become an impediment.

There is *no danger* from the mere escape of matter, as the books would lead you to apprehend. The sooner it is got rid of, the better. The exhaustion of the system is in its production, not its ejection. Lest, however, when the quantity is excessive, the patient suffer from the shock of too great a change, by the sudden relaxation of the parts that have been so long distended by the accumulated matter, you may at first restrain it a little. If, at any time during the flow, he shows symptoms of fainting, stop it for a while, and give him stimulants and tonics—such as Beach's wine bitters, or the compound tincture of myrrh combined with an equal portion of the syrup of Prinos verticillatus. Then replace the poultice, so that the matter may flow more slowly. Be sure, however, In dressing, *not* to let the *air enter* the wound. This constitutes the only danger, as it may produce excessive inflammation. It is no reason, however, for only "having a small and oblique opening with the lancet, to be occasionally opened and then carefully closed!" When covered with the slippery elm poultice, it is "hermetically sealed" against the action of the air. As an additional precaution, however, compresses should be kept upon the part, bearing, as much as possible, from above, downwards.

When the flow of matter has entirely ceased, you may let the opening *close.* If the evidence of continued suppuration again appear, *re-open;* give it exit; and then throw in stimulating astringents. Your best mode of injecting, in such a case, is by means of a common catheter, pushed up as far as possible into the opening. If the opening be large enough, as those recommended to be made with caustic, the liquids you throw in will soon return, after having stimulated all parts of the suppurating surface. The catheter should be filled with the fluid to be injected, *before* being introduced, so that no air may be forced up in advance of it. A suitable article for the purpose is the compound tincture of myrrh, combined perhaps with the tincture of kino, catechu or geranium.

Keep the external *orifice open* until the *abscess heal up internally.* If this should not seem likely to occur, under the use of the means recommended, soap-suds may be injected; and should that not suffice, a weak solution of Veg. Caust., gradually increasing in strength. But these latter articles are not often required.

Whenever the matter reappears, after healing, open again and proceed as last directed.

These or similar means are *all* the strictly *local* treatment required. But, though it is absolutely essential to drain off the pus and make such applications as will aid the healing process, these measures are, after all, the least portion of a radical cure. We are told by an old school authority that "very few patients recover from this disease under any circumstances, and those that escape remain puny and debilitated." This confession is not surprising, when we find that this same author says not one word about constitutional treatment, after matter has once formed. I can answer for it, that by proper attention and the administration of suitable remedies, you may generally, I ought perhaps to say, almost always, succeed in curing this much dreaded affection. I have myself had at least a dozen cases, all of which are now well.

Of general remedies, simple attention to the *general surface* is, as usual, a primary consideration. Let the patient have the warm alkaline bath once or twice a day.

If there be acidity of the stomach, which is a very common symptom, begin with an *emetic*, followed by a mild but tolerably brisk *cathartic*, of the hydragogue character. The emetic should be repeated as often as the acidity becomes troublesome. Gentle aperients are occasionally needed throughout the treatment. These may be added to

The *Scrofulous Syrup* (For. No. 14), which the patient should constantly make use of. If he is much debilitated, he should also have *tonics;* those of a stimulating character may have to be preferred. A good plan is to give the Restorative Bitters (For. No. 7)—to which a small portion of the com. tinct. of myrrh has been added—in alternation with the syrup. Or, to render that preparation more tonic, the Apocynum cannabinum and Columbo may be added.

Should the patient become *feverish*, a pretty active cathartic should be given, followed by diaphoretics.

If, as occasionally happens, the kidneys show any symptom of being involved in the disease, the *mucilaginous diuretics* will be beneficial.

You are to understand that the treatment I have recommended, so far, is specially for the cases where pus has formed and must be let off. The *preventive treatment* mentioned in the books is admitted, even by those who recommend it, to have failed. Nevertheless, I am far from believing that we have not remedies in our hands that will arrest any such case, if applied in time and with sufficient energy.

That such measures as "purging, bleeding and low diet" should have altogether failed, is no reason for not having confidence in a better and more rational plan. This antiphlogistic trio is *all* the constitutional treatment mentioned by one very generally received authority.

You must bear in mind that the patient's skin is dry and feverish; that it has for a long time failed to perform its healthful functions; and that the general *circulation* is unequal, with a particular determination to the lumbar region. The feet will generally be found cold, and the bowels either costive or irritable. Dyspeptic symptoms are also frequent, and the whole assimilative system is in disorder. The existence and continuance of all these derangements, depend mainly, no doubt, on the two first mentioned—the inequilibrium of the circulation, and insufficient secretion through the skin.

Whenever, therefore, the *premonitory symptoms* of this disease occur, such measures should be adopted as to *prevent* its *development.* You will be most likely to succeed in this, if you restore the function of the skin, and equalize the circulation; bringing back a natural warmth in the extremities, and regulating the action of the stomach and bowels. Your best means, then, will be first to

Administer an *emetic*, and follow it up with an active hydragogue *cathartic*, containing a small portion of Podophyllin. These measures should be repeated as often as every week or ten days, until every symptom of the approaching disease has disappeared. The bowels may be further regulated, in the intervals of the emeto-catharsis, by the Anti-Dyspeptic Pills (For. No. 8), the Hepatic Powders (For. No. 12), or small doses of Podophyllin, or of the extract of Juglans, combined with some stimulating aromatic to prevent griping—or the extract of Euonymus.

The *alterative syrup* should not be neglected in such a case. In connection with it, free use should be made of *diuretics*, such as have been before mentioned.

By far the most *important* preventive measure that can be adopted, according to my experience—the most directly calculated to arrest the destructive progress of the local disease—is the application of the

IRRITATING PLASTER over nearly the whole *lumbar region.* It should extend from the highest origin of the Psoas magnus, that is, from the last dorsal vertebra, to the sacrum, and be wide enough to cover the spine with two and a-half or three inches of the surface, on the affected side. This plaster should be often removed and re-spread, until free suppuration is got up all over the space it covers. To keep up the discharge, the same plaster should be continued, if it can be borne, for a month or six weeks, but changed twice a day, to clean off the pus, taking care always *not to wet the sore.* If the irritation should affect the constitution so much as to prevent sleep, the plaster must be left off for a while, and simple cerate applied (equal parts of mutton tallow and beeswax).

An irritating plaster may also be placed with advantage along the groin and over Poupart's ligament.

This counter irritation and *revulsion* to the spinal surface, will aid very materially in the *cure* of the disease, even after pus has formed and passed off. The abscess will *heal* much *more readily* than when no such application has been made.

The superiority of the Irritating Plaster (For. No. 1) to the antimonial ointment, blistering with cantharides, or ulcerating with setons, is too well known to all who *have* used it, to need any recommendation. Let those who have not used it give it a trial, and they will observe a striking difference. Compared with the efficiency of this counter-irritant, or revulsive (according as it is used), all other such means are *trifling*. I would rather be deprived of all the others than this one. So highly do I prize it, that (to illustrate by the disease under consideration), I firmly believe this simple means *alone*, if thoroughly and faithfully applied, would control every incipient lumbar abscess, where suppuration has not already become excessive. In two cases, where there was evidence of considerable amount of matter having been formed, and the patients recovered without the abscess opening, I had reason to attribute the favorable result almost wholly to the Plaster, although other means were, of course, not neglected.

It is but just, however, to add, that other Eclectic practitioners claim to have had similar results from caustic issues in the back, over the origin of the psoas muscles.

LECTURE XVI.

TUMORS.

Definition and Distinctions — Causes — ADIPOSE TUMORS — Nature — Discutient means to be tried — Compression, Irritating Plaster, etc. — Iodine — Removal, the knife preferable to cautery or ligature — FIBROUS TUMORS, structure, diagnosis and prognosis—Excision, or incision and dissecting out—Late or early—Precautions in and after operating—CELLULAR TUMORS—Origin, progress and termination, dangerous transformation — Early treatment, absorption or excision — Later means and methods — MALIGNANT TUMORS, and particularly the *Vascular*—Description—Precautions—Compression, Stimulants, Irritation and caustic Circumvallation.

A "TUMOR" may be defined a preternatural enlargement or protuberance of the soft parts of the body, distinguished by its permanence from an ordinary swelling. It is further characterized by a structure, differing more or less in every case from that of the part from which it arises. Every enlargement that merits the name of a tumor, arises from some disease or unnatural action, and is, therefore, a *new formation.*

Tumors that have the strongest resemblance to the natural tissues, the merely fleshy or fatty tumors, contain a considerable amount of lymph, and their bulk is indeed most generally made up of that secretion.

A common *induration*, resulting from plegmon, possesses a peculiar structure, which, however, is not permanent; but, being gradually absorbed, gives place to the natural conformation of the parts. But in some instances, even of common inflammation, neither resolution nor suppuration takes place. The inflammation ceases, but the swelling remains; the "tumefaction" has become a "tumor." After this the action going on in the part is neither inflammatory nor healthy; it is a peculiar increased or perverted development of the organism. The tumor is as permanent as any other portion of the body; and in the regular progress of physiological action, it is absorbed only to be re-deposited.

Adipose Tumors,

or *fatty* tumors, may be occasioned by a rupture of the vessels of a part from any mechanical cause, or by a change in the nutrition of the part brought on by previous inflammation.

Tumors, however, often appear spontaneously, that is, without any obviously assignable cause. But it is by no means certain, that one or other of the above mentioned causes has not been in operation. The injury may not have been so violent, nor the inflammation so high, as to excite attention or be remembered.

It has even been supposed, by some, that all these fatty tumors originated in living vesicles, thus assigning them a separate vitality, as a sort of hydatids. This idea of their *nature* does not invalidate that of their mechanical or pathological *origin*, just given. This independent, parasitic vitality appears as the result of the original vitality of the part perverted, but not destroyed.

These tumors, then—possessing a new organism, if not "vital principle," and each existing upon the body a distinct member, if not an independent body or whole—are not easily removed by any constitutional means. The ordinary means for discussing chronic inflammation, and promoting absorption, have little or no effect upon them.

In the stage of *tumefaction*, however, or while the action in the part still continues inflammatory, absorption of the *incipient* tumor may almost always be accomplished. Therefore,

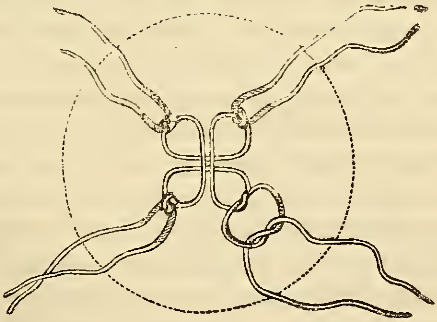
In the TREATMENT of these cases, inasmuch as we can not always tell to what extent the transformation has gone — and as, moreover, a little delay is not necessarily dangerous—it will be well to institute means for promoting absorption, before proceeding to other measures. New formations are generally, for a while, less firm, less able to resist destructive influences than the old. An evidence of this may be seen in the re-opening of old wounds, on exposure to cold or prolonged abstinence.

Strong *stimulants*, with firm and continued *compression*, will often answer the purpose. If the ordinary stimulants fail, accompany the compression with means to excite slow but long continued *inflammation* of the surface. The Irritating Plaster, kept on with compression for a long time, has often succeeded, especially when associated with the proper internal means for aiding absorption, such as diaphoretics, and still more, diuretics and hydragogue cathartics. The hydriodate of potash, and other preparations of iodine, have been highly recommended by many. But, though I have seen successful results from their application, so far as the local absorption is concerned, the deleterious effects on the constitution generally, and the proneness of tumors, so removed, to return, induce me to regard these remedies as unnecessary, to say the least—even if the evil resulting from their use, does not, as I believe, overbalance the good. Many who are in the constant habit of using and praising such articles, seem only to regard the immediate object in view, paying little attention to the constitutional results, and still less to the future history of the case. This remark will apply particularly to many of the boasted hospital trials and cures. No danger need be apprehended from the inflammation produced by the Irritating Plaster, in connection with the other means we are in the habit of using.

If, then, after a fair trial of the local and general means pointed out, you fail, as you may expect to do in many instances, and the tumor is so situated as to be conveniently operated upon, the *knife* is generally the best means you can resort to.

Tumors can, however, in some cases, be removed by the *ligature* or *caustic potash.* The latter must be applied so as effectually to destroy every portion of the organized mass, and cause it to slough off. For the former, two needles must be drawn

FIG. 9.



through under the tumor at right angles and touching each other, carrying each a double ligature. The loops being cut, leave four ligatures, or the "eight-tailed ligature" under the tumor. The ends being tied in four knots, it perfectly strangulates every part of the tumor. [See Fig. 9.]

The knife is far preferable to either of these means, when the patient can be brought to submit to it, as it causes less pain, and there is no danger, *in this character of tumor*, of a return, after it has once been wholly removed.

FIBROUS TUMORS.

These tumors, so called from their peculiar structure, appear, when cut into, to be composed of a uniform yellow or whitish substance, sometimes divided into lobes by septa of condensed cellular membrane. Few vessels penetrate them; and, in some cases, none at all can be discovered. The substance of the fibrous tumor is always contained in a capsule of greater or less density, to which it adheres very loosely, and which seems, in fact, to be the surface from which the substance of the tumor is secreted.

This *substance*—though the tumor very often has much the appearance of the adipose tumor—is not found, when *removed*, to melt by heat; nor indeed does it contain proper fatty or sebaceous matter. It is composed, apparently, as the name imports, of a fibrinous matter.

The *shape* and *surface* are always irregular, but never feel hard and firm, like schirrous, but rather of the consistency of *dough*; nor is it painful and slow of growth as that malignant formation. However, if it acquire great *size*, it may become *painful* and irritating from its weight upon the surrounding parts; and may even burst and form an *open sore*, after which an alteration may take place in the character of the tumor itself. In fact, the principal annoyance of this sort of tumor to the patient is from its bulk, which also constitutes the principal *danger* from its mechanical effects upon the surrounding parts, rather than any originally malignant character.

The *removal* of fibrous tumors is easy. They are almost always so situated as to be accessible to the knife. It is simply necessary to make an incision through the skin, and divide the capsule, so that the tumor can be removed with the fingers or forceps; its adhesion to the capsule being so slight as to offer little or no resistance. If there has been inflammation excited, it may be necessary to *dissect it out*. There may also be adhesions to *vessels* so large as to require them to be taken up and tied. Another precaution to be observed in the cure of these vascular adhesions, if there be also any appearance of present morbid action, is *not* to permit healing by the first intention, but keep it open and excite healthy suppuration, and treat it in other respects as *you* would a case of cancer.

But when the surgeon is consulted early, before any adhesions have occurred, or any degeneration in the action of the part, and the patient is willing, these tumors may be *cut out* without any hesitation.

CELLULAR TUMORS.

These are formations of an evidently cellular structure. They may, at first, be divided into laminæ of cellular substance. Alter a while the laminar structure becomes indistinct, and the layers compacted together. There is always more or less albumen, sometimes fibrin also, in the cells; but the mass of their contents is evidently oily or sebaceous matter.

This kind of tumor may have its original *nisus* in a small gland, in which case it will appear to have a distinct capsule. When it forms in the subcutaneous substance, there is no proper capsule, although the condensation and thickening of the surrounding cellular tissue may bear a strong resemblance to a capsular formation.

These tumors are *smooth* and compact, without the indurated appearance of schirrus. Nor have they any cartilaginous or membranous septa, like cancer and the fibrous tumor. They are *never painful* unless they become inflamed, or from their weight and pressure upon the surrounding parts affecting the nerves. The cutaneous veins involved in the tumor sometimes become *varicose*, and the skin over its whole surface may be destroyed. There is, however, no tendency to fungus growths; nor much susceptibibility to suppuration or ulceration. When abrasion takes place it is more apt to *slough* away. In this way it is often, when small, *spontaneously* or accidentally *cured*. But when the tumor is large, the slough is a long time in being thrown off, and there is, meanwhile, a very offensive sore. This is accompanied also with great constitutional irritation and injury. It becomes, in fact, as *dangerous* as true cancer. In its original character, however, this tumor has nothing malignant about it: it is as free from danger, as it is easy to manage.

Even after inflammation and sloughing, is much more easily eradicated than any cancerous tumor.

In the TREATMENT of these cases, like the former, you may sometimes succeed by promoting *absorption* by such means as were before recommended. If these means fail, or if the tumor is already very large, recourse must be had to the knife, caustic or ligature. If called to the case before any inflammation has occurred, and there appears to be no disease in the surrounding parts, *excision* will be the best of all treatment.

But *after sloughing* has commenced, even if the knife be available at all, it should not be relied upon alone. In such a case, remove as much as possible of the morbid growth, by the knife or the caustic, and then apply means to promote suppuration, and bring it to heal by healthy *granulation*. The *constitution* must also be sustained, by proper diet and medicine; and, above all, suitable application made to the general surface, while the proper dressings are restoring the local health. For the latter purpose, it will commonly be sufficient to wash the surface of the sore two or three times a day with a strong solution of the mild caustic, keeping the part covered with a poultice that will absorb the pus as fast as it is produced.

If *fungous growths* make their appearance, they have to be kept down by stronger caustic applications. Generally, however, after the application of the mild caustic, free sloughing will take place, and all the morbid formation will be thrown off; after which the sore will assume a healthy character, and readily heal under simple dressings.

OTHER VARIETIES,

and other DIVISIONS of tumors, are presented in the books, but the division into the three classes mentioned, comprehends all the forms of non-malignant tumor, and appears as good—that is, as practically useful as any.

"Encysted tumors" might be instanced. They are distinguished as consisting of a sac, containing a thin fluid, which is not pus. The definition evidently corresponds to the description of cellular tumors above given. strictly fatty encysted tumors are sometimes called "steatomous;" those embracing honey-like matter, "melicerous;" and those having a pap-like fluid, different from either of the others, "ætheromatous."

What might seem the most important practical division, is into those which are, and are not,

Malignant Tumors.

It should be remembered, however, that almost any tumor or sore *may* become malignant. Thus, the fibrous tumor, above spoken of, as well as the cellular, may become a tumor or sore as "dangerous and difficult" to manage, by ordinary means, as any schirrus or open cancer. Those forms known to be malignant I shall speak of as varieties of cancer. Among these may be named the *tuberculated* (a congeries of small, hard, rounded tumors), and the *medullary* sarcoma, or fungus hæmatodes. Under this head, however, I may distinguish the

Vascular Tumor.

This is sometimes called *Aneurism by Anastomosis.* It is, in fact, a complete network of vessels. Some suppose it is caused by arteries opening into the cellular interstices, giving rise to corresponding veins; others, that it is originally a particular structure, formed by fibrous membrane, from the internal surface of which prolongations pass off, crossing each other in various directions, and accompanied by as many arteries and veins, to a "prodigious subdivision." Certain it is that the tumor, when fully developed, seems to be almost wholly composed of vessels, a sort of placental formation.

When the vascular tumor forms just beneath the skin, or in the integuments, it can be readily distinguished by the external appearance. But when it occurs beneath the fasciæ, the external appearance is no guide, and the diagnosis is very obscure for a long time. There will be some degree of tension and swelling, with a sensation of throbbing and pain. It may be noticed, however, that the tumor will vary in size, according to the tension or relaxation of the neighboring muscles, and according to the degree of excitement in the whole vascular system. Whenever we discover a swelling to have these peculiarities, we should be on our guard as to any

Treatment that may be adopted. Wounds, or incisions, into such tumors are very troublesome, as it is almost impossible to suppress the hæmorrhage. No attempt at an operation should be made, unless the tumor be so situated that every portion of the mass can be at once removed. Their most common site is about the eye, or upon the temporal muscle, or other parts of the head and face.

The proper treatment then will be *stimulus* and *compression.* Even the Irritating Plaster may be applied. Its slow and gradual influence will frequently produce such an amount of adhesive inflammation as to completely obliterate the vessels, they being small, though "in number without number." The end may be accomplished by surrounding the part with an eschar, made by caustic potash, when that is practicable, and then applying the plaster and compression. The vessels supplying the tumor will thus be destroyed, and active absorption at the same time promoted. As this *circumvallation* of the tumor is not always practicable, the caustic may be applied to the surface of the tumor itself, if the proper care be taken, at the time, not to cauterize so deeply as to rupture the vessels before inflammation is set up, and afterward to keep sufficient compression. This pressure is important in all cases, in order that the vessels be not allowed to continue their regular action and growth.

LECTURE XVII.

GANGLION AND EXOSTOSIS.

TUMOR on the TENDONS or LIGAMENTS—Character, cause, etc.—Ulceration and Induration—Discutient | means—Excision—Treatment, medical or surgical? Illustrative cases—Tumors on BONES, or EXOSTOSIS—Description and distinction from Hypertrophy of Bone—Progress—Treatment, general and local—Starvation and Gluttony—Operation.

THIS term GANGLION is used *in surgery* to designate a peculiar encysted tumor which forms in the fasciæ near the tendons and joints, usually on the wrist, hand and top of the foot. The fluid it contains is like the white of eggs, or sometimes more like milk or cream. It is generally found adherent to the tendons of the muscles, or the ligaments of the joints.

The probable CAUSE is some mechanical injury, which occasions a slight rupture in the sheath of the muscles, or the synovial membrane; in consequence of which the secretion of the bursæ mucosæ, or the synovial fluid itself, escapes, and occasions the formation of the membrane, sac or cyst, in which the fluid is retained, and continues to accumulate. As the fluid accumulates, its new membranous investment constantly enlarges, producing, first, stiffness in the adjacent joint, then emaciation of the muscles, contraction of the tendons, and sooner or later a total loss of the use of the joint. Thus, on the back, or even front of the wrist, it may affect several tendons at once, so as to destroy the power of extending or flexing the fingers.

If the ganglion is allowed to follow its own course, an opening is at last formed, from which a sanious fluid exudes, and a very malignant ulcer is sometimes the consequence.

The course of TREATMENT indicated, is such as is calculated to promote *absorption* of the fluid, and *adhesion* of the surrounding tissues, so as to prevent re-accumulation.

To accomplish the former of these two objects, strong *stimulants* should be applied, together with firm *compression* by means of a bandage. This may suffice in slight cases, but in more severe ones, or where this fails,

Let the surface over the part be *cupped* and freely *scarified;* and an Irritating Plaster then applied, to set up suppuration. Keep up this action in the part for several weeks. Then discontinue the irritating application, and

Re-apply compression and strong stimulants, as before, with the addition of astringents. It may require several weeks, and in some instances, several months, of these additional applications, to complete the cure.

If, after trying all these means, you should fail of success (which, however, will not often be the case, if you try them with proper perseverance), the *knife* must be resorted to. If, indeed, the tumor is well defined, and no strong adhesion exists between it and other parts, and the patient is willing to submit to the operation, it is perhaps as well, or better, to use the knife in the first place.

Extirpation, however, by the knife, may be difficult or impossible, in the case of a diffused ganglion, such as often occurs on the top of the foot, or front of the wrist. Here the irritating and inflammatory process must be relied on.

Induration, instead of ulceration, will sometimes occur, in cases of long standing. I recollect a case of this kind, treated by Dr. Morrow, at Worthington. It was of several years' growth, and the foot had become as large as the thigh. Several surgeons who had examined it, had pronounced it a case of enlarged bone, and incurable except by amputation. Dr. Morrow decided that it was only a hardened ganglion, and susceptible of removal. Accordingly, he instituted a course of treatment, including cupping, scarification, suppuration by irritants, together with occasional bitter herb fomentations, and as much compression as the patient could bear. The result was, that in the course of two or three months, the tumor had gone, and the patient recovered the complete use of the limb and foot.

In such a case as this, no "operation" short of amputation, could have been of any avail, and how uncalled for that was, the result of better surgery proved. Yet how much more credit, in an ignorant community, would have been gained by the practitioner who had cut off such a leg, than he who merely cured up a lame foot?

In several cases I have used the knife where it might have been dispensed with, but was more convenient, and preferred by the patient. In others, I have used the means above described, and in no instance failed of complete success, though I have never had such a monstrous ganglion to bring down, as that just referred to.

Notwithstanding my having operated as above *confessed*, I would recommend the medical in preference to the cutting treatment, *in all cases*—the cure by adhesion, in preference to extirpation with the knife. The former course is far more certain to prevent a return of the disease, which is very common where the healing process does not go on with perfect precision.

Even when the operation is performed, if there be any appearance of the peculiar *ganglionic fluid* continuing to be discharged, healing by the first intention should not be permitted. The Irritating Plaster should even then be applied, and the adhesive or granulating process excited. By these means I succeeded in two cases operated on where the fluid discharged was so abundant, as of itself to prevent healing by the first intention.

EXOSTOSIS.

All tumors formed upon the bones in a healthy condition, are included under this term. These tumors are of various forms and densities, differing in their structural arrangement. They may be solid, dense and smooth as ivory, cellular and smooth on their external surface, also, or rough and jagged, what is called "tuberculous."

Professor Gibson divides them into four classes:

1st. The *circumscribed*, which is the most common kind—smooth, seldom painful, and rarely becoming very large.

2d. The *lamellated*, consisting of numerous plates laid over each other, and often piled up in irregular masses.

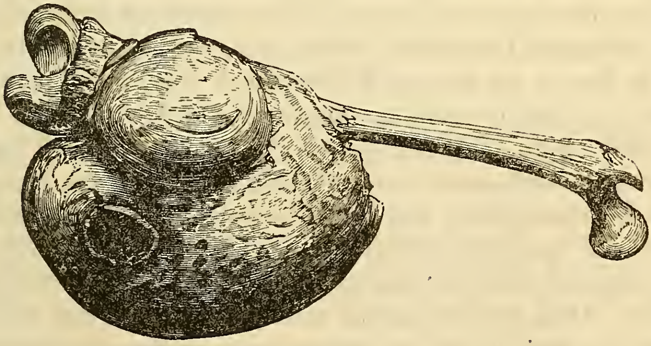
3d. The *tuberculated*, consisting of knobs or irregular excrescences, either closely connected or insulated.

4th. The *spinous*, having slender processes terminating in points or knobs.

These tumors are most frequently found upon the extremities, the humerus and femur being oftener affected than other bones.

Bone tumors grow from the periosteum, or from the external surface of the bone, under cover of the periosteum. In some cases the point of attachment is a small neck, the main portion of the tumor being bulbous. These are apt to be broken off accidentally. Others are attached by a more extensive surface.

FIG. 10.



When the surface of the tumor is rough or sharp pointed, it is often a source of much *inconvenience*, by impeding the motions of muscles, or pressing upon some important organ. They have no malignant character, being governed by the same laws as other bony formations.

Bones sometimes become *enlarged* throughout their whole extent, and yet appear to be free from disease. This enlargement, though perhaps produced by a similar state of the system, is not properly "exostosis"—it is no tumor.

The *causes* are not well understood. External injuries are said to be the most frequent. Their *progress* is very slow and attended with but little pain or inconvenience. They can be *distinguished* by the peculiar hard, bony feeling at points where bone is not usually perceptible. If the tumor projects into a natural cavity, as that of the skull, the diagnosis is difficult or impossible. After having attained a certain size, it generally remains stationary, the surrounding parts becoming accustomed to its presence and accommodated to its size. No inconvenience then attends it. Occasionally, however, the pressure causes suppuration of the surrounding parts and becomes a source of much difficulty, if not danger.

The TREATMENT will consist of such means as promote the activity of *absorption* without inducing debility.

Strict attention to the general surface, are of much importance. The Alkaline Bath at night, two or three times a week, together with cold water and brisk friction applied every morning, are measures not to be neglected. These, with strong stimulants and compression applied to the part, will do much toward suspending its growth, and even discussing the tumor. The Irritating Plaster applied for a long time, keeping up a purulent discharge, and followed with stimulants and compression, will prove beneficial. Brisk purgatives should be given once in five or six days, and the bowels kept regular in the interval, by diet, if possible. One measure, for the latter purpose, will be to make the patient, if practicable, drink half a pint of pure cold water every morning on rising from bed.

All stimulating food and drinks should be avoided, and the accustomed quantity of *food* should be gradually *diminished.* This may be done, if carefully managed, without inducing debility. Most persons eat too much, at all times, and by thus over-taxing the digestive and assimilating organs, the absorbent process is enfeebled; and hence we see sores, of various kinds, appear on the surface to give outlet to noxious fluids, which should have been taken up by the absorbents and carried off through the natural evacuations; or we have tumors appearing in the soft parts, or on the bones. If then we can institute a course of regimen that will correct this gormandizing habit, we do much toward removing these tumors, by promoting the natural activity of absorption. I once knew a young man in college, who made the experiment upon himself, of limiting and diminishing, from day to day, his allowance of food, until he could live, and feel well, on less than one-fifth the quantity he had formerly taken. His strength was not impaired in the least, either physically or mentally; though he became very much thinner, all the fat of his system seeming to have been gradually absorbed without injury. Care should be exercised in this matter, however, for if debility or nervous irritability is induced by the low diet or starvation, it will result in evil. If these means fail, the tumor may be removed by an operation. The soft parts over the tumor should be laid open and dissected sufficiently to expose its face, and then it may be removed with a saw of the proper dimensions, a trephine, or a chisel. The surface of the bone from which the tumor is removed, should be made smooth by the bone forceps and the soft parts replaced, and adhesion by the first intention promoted.

LECTURE XVIII.

POLYPUS OF THE NOSE—POLYPUS OF THE WOMB—CANCER OF THE WOMB.

Polypi in general—Nasal Polypus—Cause—Various Incipient Symptoms—Progress and Results—"Cancerous Polypi"—Treatment, Stimulant, Caustic and Mechanical—General Remedies and Regimen—Relapse to be Prevented—Mechanical Surgery Insufficient—Uterine and Vaginal Polypi—Slow Progress—Diagnosis—Application of the Ligature—Injections and Dry Topical Applications—Examples of Mistake and Mistreatment for Prolapsus Uteri—Cancer Uteri—Symptoms and Complications—A Curable Disease—Directions for Injection—Case—Necessity of Perseverance.

Polypi may be defined as fleshy excrescencies, of a vegetative or zoophytic, rather than animal character, varying in size, color and destiny, and occupying some of the cavities of the body, generally growing on the introverted surface, lined with mucous membrane.

As the nasal or uterine mucous surface is by far the most usual *habitat* of these troublesome growths, all that need be said of them will occur under the two heads of Polypus of the *nose* and *uterus.*

Polypus of the Nose.

This is a very common disease, particularly in climates that are both damp and warm. Wherever it occurs the state of the weather has considerable influence over it. A polypus is a living *hygrometer.* Just before a storm and during wet weather, it is much more swollen than at ordinary times, and when a change to dry weather occurs, it perceptibly shrinks in size. Further than this direct subjection to atmospheric vicissitudes little is known of its character, and

Cause. It has been supposed that it always originates in some *mechanical injury.* Another opinion is, that the predisposition to this disease is very generally *hereditary.*

This polypus often *comes on* as a mere swollen and thickened state of the mucous membrane, independent of local causes, with many of the symptoms of a common cold. This swelling frequently appears to *change its seat* from one part to another, or even from one nostril to the other. In other cases its distinct existence may be detected when it is not larger than a pin's head, like a little fungous pimple, generally quite insensible. In other parts it becomes dark-colored, but in the nose it is generally light-colored, and sometimes white, having a clear cartilaginous appearance, and being much less vascular or liable to bleed.

The symptoms are at first those of *catarrh*, with unusual *sneezing*, especially when the patient changes his position. As the disease progresses, various unpleasant sensations are experienced, chiefly attributable to the mere mechanical obstruction. A sense of fullness and dull pain in the head are seldom absent. The *eyes*, one or both, are liable to become suffused with tears; the ductus ad nasum may even be quite closed up, causing "fistula lachrymalis." The sense of *smell* is generally lost. That of *hearing*, too, may be subsequently injured, in consequence of the polypus growing backward into the throat and pressing on the Eustachian tube. Even the *teeth* are sometimes crowded out, and the voice assumes what is called the *nasal* sound from the air *not* passing through the nose!

The actual *sensation* of *fullness* is generally first felt at the *side* of the nose, the parasite most commonly taking root in one of the turbinated or spongy bones. After enlarging so as to fill up the whole nasal cavity, it may project externally through the *nostrils*, or backward into the *throat*, occasioning difficulty of *swallowing* and even of *respiration*. Sleep is thus often disturbed, the patient having to lie with his mouth open. The disfigurement of the face from swelling of the nose may be very great, independently of any secondary diseased action. The ossa nasi may be separated for nearly an inch.

If the disease is allowed to continue it may occasion *ulceration* of the *bone;* after which the patient rapidly sinks. The breath becomes very foul, and hæmorrhage from the part now occurs very frequently, as well as from other parts of the body. Hectic soon follows, with coma and death.

Precise distinction is sometimes attempted between *fungous* and *cancerous* polypi. But I am clearly of opinion that the attempt must be ineffectual and often practically injurious. Any polypus may, by neglect or improper treatment, assume a malignant character; and a tumor that is plainly cancerous from its origin is improperly called a polypus. That cancers do result from polypi is to be attibuted more to bad management than any natural tendency in the latter to such a transformation. Still it must be confessed that a polypus may become, especially in scrofulous individuals, quite as malignant and fatal as any " true cancer."

In TREATING this affection, you have generally time to attempt its removal by *mild means*. When your first means fail, use others, and *stronger*.

A simple application of the *powdered sanguinaria* (Sang. Canad.) is often sufficient. If this appears to have no effect, after a few days' use, combine with it the *Iris versicolor* and *Podophyllum peltatum:* or you may try either of these alone. I have sometimes succeeded with one of these articles, where the combination, which is generally preferable, seemed ineffectual. If after sufficient time, say four or five days' use of each means, these all fail to make any impression, substitute the pure sesqui-carbonate of potash, in powder, till you have disorganized the accessible parts of the tumor; and then resume the former powders. If any of these applications are operating properly, the polypus will *turn black*, and *begin* to slough off. This degree of success will indicate the continuance of the same measure until the whole is removed. Either the vegetable or alkaline applications should be repeated two or three times a day, if they do not cause too much pain.

If the mild caustic is not strong enough to disorganize the tumor, aid it by *mechanical force.* Take hold of the polypus with sharp pointed forceps, and crush it in various directions, even tearing away any parts that you can detach. Be sure to disorganize the main part of it, squeezing and twisting freely with the sharp teeth of the instrument, in order that your subsequent applications may penetrate the center. There is but little sensibility to embarrass the operation; and any hæmorrhage that may be occasioned can be checked with styptics. After this "operation," re-apply mild caustic to the lacerated mass, in the shape of a strong wash, as often as once a day, at least—occasionally applying a little of the dry powder, if it do not give too much pain.

This plan *will* invariably *succeed*, the whole product of "perverted nutrition" passing away in the suppurative process. When this seems to have been accomplished, discontinue your caustic, but

Resume the stimulating *powders*, with a view to completeness of cure, and preventing a relapse.

These articles, however, should never be carelessly used as "errhines," *i. e.*, merely *snuffed up*. The mere local irritation of them may, through sympathy, excite severe sneezing and coughing; and I was well satisfied in one case that fell under my observation, that their actual *inhalation* had occasioned fatal inflammation of the lungs.

These *irritating powders* can be safely applied by means of a camel's hair pencil, slightly moistened—with the additional advantage of being, in this slightly moistened condition, laid exactly on the point desired. The same plan had better be adopted in applying the caustic powder.

I have said nothing about the *ligature* in this place, because I have never seen a case of *nasal* polypus adapted to it. Should you meet with one, of such a shape, and in such a position that the pedicle can be tied, you will, of course, prefer that measure to the "mashing" process; following up with the other applications to the diseased nucleus, in order to effect a *radical* cure.

In almost all cases of troublesome polypi, there is more or less derangement of the *general health.* The local treatment is then not sufficient.

The patient should make daily use of the Alkaline or Saline Bath.

The Alterative or Scrofulous Syrup (For. Nos. 11 and 14), or both in alternation, or some equivalent prescription specially indicated, should be constantly continued, until *after* all traces of the disease have disappeared.

The *diet* may require to be restricted or regulated, watching the effect of any change on the constitution. As in all cases, be cautious of a too spare as well as too "full habit of body"—avoid sins of omission as well as commission. The patient should be neither starved nor stuffed.

The *bowels* must be kept in regular and healthy action, and may be better for an occasional pretty *active* cathartic.

To *prevent a return*—besides a continuance of the powdered Iris, Sanguinaria or Podophyllum—you ought for months after the cure, to apply to the restored surface such articles as the Haarlem Oil, and Oil of Cedar in combination—always remembering that the removal of the polypus is not curing the morbid condition that gave rise to it; and that

"To make assurance doubly sure," proper local as well as constitutional means must be persevered in, for a long time after all traces of the annoyance have disappeared.

The mere *mechanical treatment* of these affections does not deserve to be called surgical. Little or no good is done by all this violence. The excrescence may be removed for a time, but is sure to return again, if not to assume a worse form. There is an old gentleman now in this city, who was operated on in Edinburgh every year, for several years in succession, by the celebrated Liston, and subsequently by other surgeons—once by Professor Barton, in Philadelphia. The polypus is now larger than ever, completely filling both nostrils, separating the ossa nasi and spreading the nose half across the face. It is not only a great disfigurement and local inconvenience to the patient, particularly in wet weather, but seriously affects his general health, though there is still no appearance of malignancy or even ulceration.

Polypus of the Uterus or Vagina.

This polypus is usually of a pear shape, and attached by its smaller end within the cavity of the womb, or about its neck. It is sometimes found adhering to the os tincæ, at others just within the cervix, or even to the fundus. It has often a small stalk or pedicle, and the great mass of it projects into the vagina.

It may be very *slow* in its growth, and for a long time unnoticed, occasioning no inconvenience, except as an obstacle on the occasion of childbirth. It may give trouble in this way long before it is large enough to prevent conception. I have examined a case where I was fully satisfied the patient had given birth to three children since the existence of the parasite. The difficulty of parturition increased each time. The polypus grew out from the body of the womb, and finally filled up the cavity and protruded into the vagina.

Polypus in the Vagina may be mistaken by the patient, and by careless or very inexperienced practitioners, for inversion or prolapsus of the womb. In such cases,

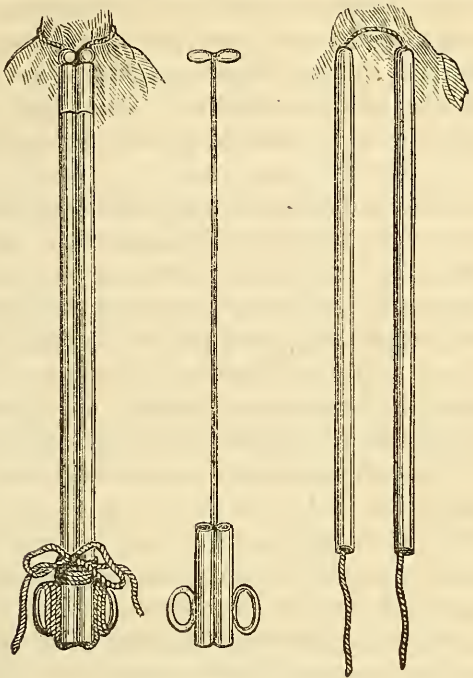
Your *diagnosis* will be aided by the history of the case. Of course, there is no question of *inversion* if the patient has never borne children. There is more excuse for confounding polypus with prolapsus, that being so *shamefully* common a condition, that the physician is often tempted to to take the patient's own word for it.

An alleged case of "falling of the womb," however, which does not soon right itself by suitable measures and regimen, must be serious enough to demand an *examination.* If, as is very possible, the supposed descent of the uterus turn out a polypus, the latter will be distinguished from it by its greater hardness, and readiness to bleed, by being dark instead of florid, and insensitive instead of very sensitive to the touch.

Polypus of the womb is sometimes, but by *no means necessarily*, connected, as I shall point out hereafter, with a *schirrous* condition or tendency in that organ.

The *removal* of polypus of the womb is generally facilitated by its pedunculated shape and position in the vagina. Having ascertained, by very strict manual examination, or by the speculum, the exact state of the case, introduce your ligature, by means of the *polypus forceps*, or the *double canula* (Fig. No. 11),* and draw it tight enough round the pedicle to cut off the circulation. In from four to six days, the strangulated parasite will slough off. There may be some bleeding at this period; it can easily be stopped with sanguinaria, geranium or any ordinary styptic. If the body of the polypus does not come away altogether, on the division of its attachment, remove it with the forceps. Then

FIG. 11.



DOUBLE CANULA.

Inject the vagina and uterus with soap and water, gradually increasing its strength, and then changing it for a weak solution of saleratus, increasing the strength of this until a solution of the sesqui-carbonate can be borne, and that again increased to a strong solution. In some cases, the alkaline strength will have to be increased very cautiously, and you may have even to begin with simple warm water, gradually adding a small portion of soap or alkali in other mild form. The object of this is to destroy the remains of the morbid growth, and prevent its reproduction.

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* The double canula, represented in Fig. 11, is made of two silver tubes, attached at their sides, with a ring on the lateral surface of each at one end. A ligature of silk cord, cat-gut, or a silver wire, is passed into each tube by its two ends, leaving a loop at the extremity: while one end is fast to one of the rings, the other is loose, and can be pushed forward, or drawn up, as you wish to enlarge or diminish the size of the loop. The loop is passed over the polypus, or tumor, and then the loose end of the ligature is drawn upon as tightly as is required, and fastened to the other ring. The canula is allowed to remain attached until the tumor is strangulated, or sloughs off. The ligature may be tightened, from time to time, if necessary.,

It may, however, be difficult or impossible, to get at the neck of the polypus, so as to apply your ligature, from its lying too far up, or being too large to be passed; or from rigidity of the mouth of the womb. In such cases, you must destroy or

Disorganize the whole diseased product by other means. The mild caustic is generally sufficient for the purpose. Pass a silver catheter as far into the uterus as possible, and inject through it your alkaline solution, increasing its strength as it can be borne or needed. You can sometimes accomplish your object more speedily by applying the

Dry caustic, in powder, directly to the surface of the polypus. By gradually dilating the os uteri, you can generally succeed in introducing your finger: fix a little wax on the end of it, with a cup-like depression, containing the powder, and thus put it on. Or you can moisten pieces of fine sponge, filled with the article, and push them up by the side of the polypus, as far as possible, having threads attached, to enable you to draw them away.

Under the repeated applications of the powder or dissolved caustic, the polypus will soon begin to *soften*, and portions of it to *slough off*. These applications must be continued until the whole mass is got rid of in the same way.

You may ascertain what progress you are making (or even be assisted in applying your cauteries) by means of the speculum uteri, though that instrument is not generally necessary.

After discontinuing the caustic, the vegetable powder recommended for nasal polypus should be thrown in occasionally, or the oils there mentioned injected through a catheter.

The same attentions to the general health are necessary as in the former case.

As young practioners, it may be necessary to remind you again of the errors in *diagnosis* to which uterine polypi may give rise; I forewarn you of blunders into which even experienced men have fallen. In "women's matters" you may be excused some hesitancy of judgment. since you are not always readily permitted the necessary means of information. Show your knowledge by telling *all* that *may* be, rather than what certainly is the matter! A very respectable lady, about forty years of age, who came to consult me last fall, had been *mis*-treated for several years by different old school physicians, on the supposition that the leucorrhea from which she constantly suffered, depended for its cause and continuance on prolapsus uteri. At last she determined to try if there was not a better practice. Her Eclectic physician, however, too much accustomed to seeing such failures to regard the ill success of such treatment as she had been under, as any reason for suspecting false diagnosis, and influenced perhaps a little too much by the *fact* of so many doctors *not* differing, continued to treat the case as one of prolapsus. This of course could not remove her local difficulties, though she acknowledged to me that her general health had been much benefited by his prescriptions, all others before his, having done her "more harm than good." Being informed by her physician of the measures he had adopted, with such insufficient success, I presumed at once that those measures could not have so far failed, had the case been such as to call for them. He informed me also, that the prolapsus was very deep, and the uterus so changed in its form as well as place, that the os tincæ could not be found! As you of course anticipate, I found that there was not, and never had been, any prolapsus in the case. There was simply a polypus, of the size of a goose-egg, attached at about an inch within the neck of the uterus, and reaching bodily into the vagina, where it would, by acting as a pessary, have effectually prevented any falling of the womb, had there been any tendency that way; and where, by its pressure on the delicate lining of the walls, it kept up the irritation and discharge, which latter it would have been worse than useless, had it been possible, to stop without "removing the cause." The whole mystery of the obstinacy of the disease was explained at once; and the long sought remedy easily applied.

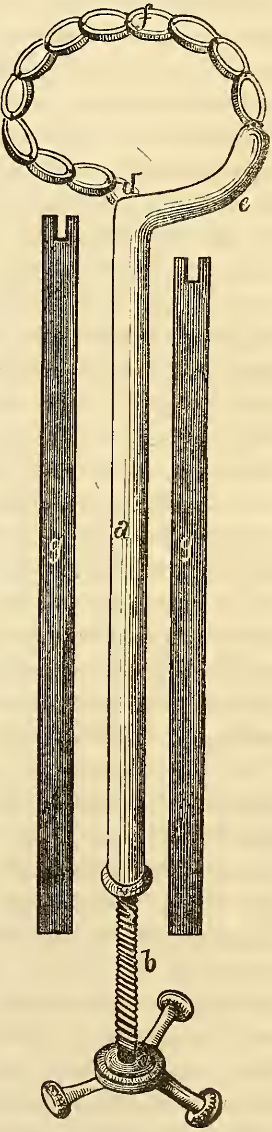
Another case I will tell you of was that of a young lady of about twenty, who, I was informed, had suffered much for two years previous from uterine hæmorrhage; so much, indeed, that on several occasions her immediate death from exhaustion had been anticipated. Her appearance, when I saw her, was such as indicated that the gradual exhaustion by hæmorrhage would ere long terminate in death. She was so emaciated that you might have studied osteology upon her figure; and her face was a perfectly bloodless white. Her physician spoke of the case as prolapsus, rendered difficult by debility from former hæmorrhage, although *he* had made no examination. The patient herself stated that another physician, a man of years, and of reputation for science as well as experience, had examined and pronounced the cause of her afflictions to be a falling of the womb. I, of course, examined for myself, and discovered two polypi, one of the goose-egg size wholly in the vagina, though springing from the cervix uteri, the other as large as an ordinary hen's egg, extending some distance up into the cavity of the womb. This patient was of the scrofulous conformation, and I feared much that the uterus was already in a schirrous condition. The course of treatment I have recommended to you for such a case, was what I advised on that occasion; and, I have been since informed by the attending physician, it was pursued with complete success. The consultation took place in New York.

What I wish to impress on your minds by relating these cases, is the *necessity* in all obstinate uterine difficulties, of a thorough and *critical examination*, before venturing an opinion, much less undertaking treatment.

[Polypus of the uterus is sometimes removed by evulsion, the os being dilated with sponge tents. The polypus is grasped with serrated or toothed forceps, and twisted off. This is only applicable when the tumor is small, or when it has a small pedicle. In other cases, the base being loosed, an incision is made through the capsule, and the mass is turned out of its bed with the fingers.]

Another instrument for removing these polypi, that might be used with much advantage, is the Ecraseur of Chassaignac. The principle upon which this instrument acts, is by a slow division of the tissues, not cutting, but crushing them off: there is no hemorrhage following its use, no danger of phlebitis or of irritative fever; it removes the tumor in a very short time, and thus supersedes the use of the knife. The *ecraseur* consists of a handle and steel canula, within which are grooves for the passage of a jointed chain, like a chain-saw, but without any teeth, or, perhaps, more like the chain used in watches, the edge being blunted, but not serrated. From the extremity of the canula projects a loop, as long as may be required, which is passed around the tumor, and gradually tightened, the handle being moved once in fifteen seconds, when a little click is heard, and the chain tightened, by the drawing into the groove of one of the links. This process continues till all the links are drawn into the canula, and the tumor is cut off. This slow method of producing strangulation and division or the growth, entirely prevents any hemorrhage. A contused wound is produced, and the orifices of the vessels are thus closed. With this instrument a polypus might be removed in from five to thirty minutes.

Fig. 12.



The Ecraseur.

Description.—The Ecraseur described above is the instrument made use of by English and French Surgeons. It is a somewhat complicated and expensive instrument, but it can be much simplified. Fig. 12 represents the simplest form of the instrument; it consists of an iron or steel canula, *a*, ten inches long and half an inch in diameter; this is terminated internally by an arm, *e*, to which the fixed extremity of the chain is attached. The chain, *f*, is from six to eight inches in length, attached by one extremity to the arm of the canula, the other passing into the canula at *d*, is connected with the screw *b*. The cavity of the canula is circular, and of sufficient size to admit the screw, but having a groove on each side to receive a square block half an inch in length, which terminates the chain, and through which the screw passes, terminating in a button beyond. The screw is of the same length as the instrument, and works in a nut cut in the raised portion seen at the outer extremity of the canula, and which is attached to it by means of a screw. In drawing the links of the chain into the canula, the screw acts upon the plate terminating the chain, which being received into the grooves of the canula, is prevented from turning, thus keeping the chain straight. The two whalebone staffs, *gg*, are intended to assist the surgeon in carrying the chain up to the pedicle of the polypus.

This instrument is much used by the Paris Surgeons for the removal of vascular tumors, cancerous growths, hemorrhoids, in fact, prominent tumors of almost every kind. I have no account of its use in removing polypi, but the adaptation of the instrument for this purpose can be seen at a glance. The following cases will serve to illustrate its use, in each of these the patient was under the influence of chloroform; Mr. Erichsen removed some piles, partly internal and partly external, with this instrument, the chain was applied round the tumor, and in the course of five minutes and a quarter the mass was completely cut off, without being followed by the slightest bleeding whatever. Mr. Stanley removed a warty exudation from an epithelial chimney-sweeper's cancer of the scrotum, with the same result. Mr. Lawrence removed a very large cellular tumor, weighing nearly a pound and a half, and in size equal to a small child's head, from one side of the generative organs of a young woman aged thirty. Seven minutes sufficed to completely detach it; it was followed by no bleeding, no ligatures, and the parts were brought together by sutures. Mr. Paget removed a vascular growth in connection with the clitoris and labium, so commonly met with in females, it was attended with the same success and the same result as in the other two.

From these cases, and others which have been reported, I should much prefer this mode of removing these growths to any other. Its advantages over other modes are, first, the quickness of the operation, the tumor being removed in a few minutes, instead of from eight to twenty-one days as is the case with the ligature. Second, its safety, no hemorrhage or other bad result following its application.

It might be urged against the use of this instrument, that its application would be difficult, but if the following directions be observed, it may be applied as readily as the ligature. In addition to the instrument described, two conducting rods should be made of whalebone, each nine or ten inches in length, and having a groove or mortise at one extremity sufficiently large to receive the chain. (Fig. 12 gg.) The loop of the ecraseur being then made sufficiently long to pass over the polypus, it may be carried up with the conducting rods and the canula. We thus have the chain supported at three points, and by this means it can be accurately applied.]

Schirrus of the uterus, which I alluded to in speaking of the last case, is a condition sometimes connected and *often confounded* with polypus uteri. For this reason, as well as on account of some peculiarities in its treatment, I shall now proceed to speak of it, instead of reserving it for the general subject of cancer.

Cancer of the Womb.

This disease generally occurs only in patients who may be described as having a cancerous diathesis.

It is occasionally connected with *polypi*, and always with previous *leucorrhea* and painful menstruation. The leucorrheal discharge contains more or less blood; and, as the disease advances, a seropurulent matter, or perhaps pure pus is mingled with it. At every *catamenial period* the pains are very great, and the discharges varying, sometimes very excessive, at others diminutive in quantity.

The patient complains much of "bearing down." The pain in the back, and in the inside of the thighs, is more severe than attends simple leucorrhea.

Darting, twinging pains are also felt in the uterus itself, coming on and going off suddenly.

On *examination*, the neck of the womb will be found hard and rough, and not unfrequently much enlarged. The os tincæ may be entirely closed, or considerably dilated, its lips having become a hard ring. The part is quite painful to the touch, especially if pressure be made upward and backward.

In some cases, where the body, as well as the neck of the womb, is in this hardened or *schirrous* condition, its cavity will be found filled with a large diseased growth (which may have been, at first, but a polypus).

In other cases there will be no separate polypus or fungous growth, but simply a swollen and hardened condition of the *substance* of the uterus, throwing out a peculiar offensive discharge, often of a dark color.

When the disease is far advanced, dangerous hæmorrhage is frequent.

Patients experience great constitutional irritation, and become much emaciated.

Notwithstanding, however, this constitutional character of the disease, proper *local* TREATMENT is the essential condition of cure; and, if perseveringly applied, it will, in most cases, prove *successful*—in spite of the orthodox doctrine that cancer of the womb is necessarily fatal.

Constitutional treatment must, of course, be attended to, but it is not peculiar. It should consist in a frequent use of the alkaline bath, occasionally changed for one of cold or tepid water, according to the judgment of the practitioner. A cathartic may be *occasionally* given with advantage, and such other means used as are calculated to keep the bowels regular. Also, let the Scrofulous or Alterative Syrup be constantly used, or the one changed for the other, or for some similar preparation.

Your first *local measure* should be the injection of simple warm water, into the vagina and cavity of the uterus. The parts are sometimes so very sensitive, that even this will give the patient considerable pain. Were you, in such a case, to inject ever so weak an alkali, or even soap and water, it might excite dangerous inflammation. Continue the warm water till it occasions no pain, then begin with weak soap-suds, increasing its strength as the patient can bear. In a few days you will probably be able to add a little mild caustic. Increase the quantity till you can use a saturated solution. All these lotions must be thrown into the womb, by means of a catheter.

Directions for making these uterine *injections* may not be unnecessary. Place a finger of one hand on the os uteri; and with the other hand direct the catheter along the finger that is on the os, till it also comes in contact with the uterus. Slip the finger a little aside, and the instrument will generally pass in. If not, turn it round and round awhile, pressing gently till it finds its way in. Having carried it in as far as you conveniently can, throw in your fluid. For this purpose, take care that the point of your syringe is exactly fitted to the outer end of the catheter, in order that the fluid may be prevented from rushing back, as it may be necessary to use considerable force. The quantity of fluid you are able to get in at first may be very small. Endeavor to go on increasing its quantity as well as strength. The catheter or tube made use of, should be of silver.

If at any time the caustic should produce irritation and inflammation, or they should occur during the treatment, suspend the irritating injections, and substitute slippery elm mucilage. Apply also warm fomentations over the pubic region.

Give the the patient a mild emetic, followed by diaphoretics, with perhaps an active cathartic or two—using such other measures as the case may indicate.

As a general rule, the injections must be *repeated* at least once a day. Twice a day will be still better, when they do not produce too much pain or irritation. The cavity of the uterus, as well as the vagina, should each time be well washed out with them.

The *powdered caustic* may also be applied to the neck of the uterus, in the manner I directed, when speaking of polypus: Place a piece of black salve or wax on the end of the finger, with a cup-like depression in it, filled with the powder. In this manner the neck of the uterus may be well rubbed and sprinkled with the caustic.

This will soon produce a softening, while it allays the tenderness of the part to which it is applied. The powder may be rubbed on two or three times a day, though the solutions may not be thrown in more than once a day. As soon as you have thus brought about a

More healthy condition of the cervix, a strong decoction of the Epiphegus Virginianus should be injected both into the vagina and womb once a day—the caustic solution being still used at some other part of the day.

In many cases it may be a LONG TIME before the symptoms will yield to the treatment; but persevere and you will finally prevail, though it may take you twelve or even sixteen months to cure a bad case. You may be encouraged, by being assured that such perseverance has been repeatedly rewarded by the complete cure of many obstinate and malignant cases of years standing, pronounced hopeless and unnecessarily fatal, by eminent authorities.

A remarkable case occurred in this city—I will give you its particulars. Six years ago, Mrs. E., then about 25 years of age, was still hopelessly suffering under this fearful disease, as she had been, for several years previous. The whole uterus was in a schirrous condition, and its cavity was occupied by a fungoid growth as large as a quart pitcher. The peculiarly offensive cancerous discharge was enormous; besides which, she had frequent hæmorrhages from the womb, so great, that her immediate death had been several times expected, by both friends and attending physicians. On some occasions, it was stated, she had lost a gallon of blood at a time. She had been examined by several eminent men, besides the physicians who had been attending the case. The wife of one of these was laboring under the same disease, and died of it some months after Mrs. E. put herself under the Eclectic treatment—though the former had been considered in a much less advanced stage. Our patient was not only thus kept alive, although during her long course of treatment she had various other ailments, and two severe attacks of inflammation of the lungs, which came very near proving fatal; but after one or two months, her improvement was perceptible, and by still persevering for fourteen or fifteen months longer, she was restored to perfect health, which she has ever since enjoyed.

Numerous other cases might be adduced, many of them cured in much less time. In fact, the course of treatment I have just described, has proved so generally successful in the hands of Dr. Morrow and myself, that we now look upon cancer of the womb as a curable disease, in almost every stage. We have not failed in one case out of fifty.

[While admitting that some cases of cancer of the uterus may be cured, I can not indorse the views and treatment of our author. It is a fixed principle, in the treatment of this disease, that the entire growth must be removed—to the last remnant—in order to effect a cure. This we find difficult in accomplishing with the cancer upon the surface, where it is open to inspection, and our remedies can be so applied as to act directly on the diseased structure, without interference with sound parts. What chance have we, then, when an internal organ, occupying important relations in the abdomen, is the seat of the disease, and where remedies are used in the dark and at random? If the cancer is confined to the cervix-uteri, it may be removed and a cure effected, and for this purpose I would employ the remedies recommended for the removal of cancer in other situations. If the structures are extensively diseased, our object will be to check the progress of the disease and mitigate the sufferings of the patient. For this purpose I have employed a strong solution of Tannic Acid, with very good results, sometimes using a saturated solution as an injection. If there is much fetor, we may alternate this with an injection of Permanganate of Potash ʒj to Water Oj, increasing the strength of the solution as it becomes necessary. The Chloride of Zinc may also be used for the same purpose, and sometimes of sufficient strength to obtain its caustic action.]

LECTURE XIX.

CANCER, ITS NATURE AND GENERAL PRINCIPLES OF TREATMENT.

Curability of Cancer—Schirrus and the cancerous ulcers described—Structure—Diagnosis—Diagnosis from result!—Distinction of schirrus from other tumors, and open cancers from other ulcers—Peculiar nature and independent vitality—Local or Constitutional—Hopeless measures of treatment—Use and abuse of the knife—Excision never indispensable or more than auxiliary to the cure—Death by surgery!

The subject on which I am about to enter, is one that requires from us a pretty full elucidation. Those who seem to regard the terms "cancerous," and "incurable," as synonymous might be more excusable for limiting their study of the disease to the simple particular of diagnosis. But if cancer is necessarily incurable, and the carcinomatous or incurable character can only be decided (as with many appears to be the opinion) by the *result*—why study cancer at all? why retain the word? If it was cured, we often hear it said, in reference to particular cases, it was not a cancer; if it was not cured, it probably was, and failure was the necessary consequence of so hopeless an attempt. There is no getting round such logic, though it is reasoning in a *circle*. Yet, by such shallow sophisms, men continue to shut out from their own minds the very possibility of improvement. Measuring others' knowledge by their own ignorance, and others' abilities by their own impotence, they continue to repeat parrot-like, after one of their most distinguished *authorities*, who said to his class, "Gentlemen, I never cured a cancer, and [of course] I don't believe that any other man ever did!"

In spite, then, of the undiscriminating ridicule attempted to be cast on all who profess to treat cancer with any view to cure it, I shall probably succeed in showing you that the most ignorant "cancer-doctor" is more nobly occupied in his professional cures, than the most learned of the unbelievers, who neither cure the disease themselves, nor recognize honorably its cure by others. If it could be proved that a case of cancer never had been cured, that would only be additional reason for studying out and trying new means and modes of treatment. Far different, however, is the fact. The principle upon which cures have been effected, is as intelligible and rational as those cures are well known and indisputable.

Cancer is a local disease, distinguished from most others by its malignancy, or tendency to destructiveness, rather than spontaneous cure; and from other equally malignant diseases, by its peculiar origin and appearance. From the irregularly tumefied shape and dilated veins of some of its forms, it gets its name, which in Latin means a "crab." Carcinoma means the same in Greek. Both terms apply more especially to the advanced disease, the forming stages being distinguished as "schirrous tumefaction," or simply "schirrus."

"Schirrus," then, may be regarded as the first stage of "cancer."

Schirrus, or a tumor *likely to become* cancerous, may be distinguished, not only by its preternatural hardness and resistance to ordinary discutient applications, but by its external appearance and peculiarities of structure.

The *surface* of the tumor itself will be found uneven to the touch; and the skin is wrinkled or puckered and of a leaden hue, occasionally dark or purplish.

The *pain* attending it is very great and characteristic. At first it may be described as merely twinging, afterward as lancinating and gnawing.

In its *progress* schirrus forms *adhesions* with all contiguous parts—the integuments above as well as muscles or bones beneath.

Its *growth* is often but *slow*, continuing in the condition above described, for several years, without any material change. Sooner or later, however,

The wrinkled *skin* about it seems to become dry, and finally *cracks* oped in several places, forming deep grooves, from which is discharged a thin, fetid and excoriating fluid.

These *fissures* deepen and widen. in some instances slowly, in others, very rapidly, with extensive ulceration and sloughing. The cavity thus formed constitutes

"*Open Cancer*," which, however, frequently fills up with an irregular fungous growth. This may go on increasing downward as well as outward, spreading widely beneath the surface. It is very irritable and sometimes bleeds profusely when touched.

The whole surface of the *sore* is *dark* colored, the skin around it remaining purple and extremely hard. The *margins* are elevated and irregular.

The *ulcer* always continues to *increase*—though in some instances, the patient will bear up under it, and bear with it for years, going about with his "incurable sore," to which, although it is of the most painful and disgusting character, he is often afraid to make any application at all, lest it only hastens his death. More generally, however, the pain, irritation and *hopelessness*, together with

Constitutional Contamination, after once the ulcerative stage has fairly set in, soon prostrate the sufferer, and he dies a "thousand deaths."

On *dissection* of a schirrous tumor in its early stage, it appears to consist mainly of a pale, gray, cartilaginous or fibrous central *nucleus*, with radiating *bands* of the same material, proceeding in all directions to the surface of the mass. These radiating bands are intersected by others, not so distinct, thus forming a kind of fibrous *net-work*, inclosing the softer parts of the mass, which are of a bluish tint, and semi-transparent. When, however, the tumor has approached the *ulcerating stage*, its various parts become more blended together. There are, however, still distinct *cysts*, including a pulpy mass of a dark greenish color, which has lost its transparency, and is sometimes even black. There are frequently several of these cysts of different colors. Sometimes they are very numerous, presenting a strong resemblance to hydatids.

These *cysts* in a tumor are regarded by some as the most positive, if not indispensable evidence, of the cancerous character. "I am not prepared," says Professor Burns, of Glasgow, "to prove that cysts invariably exist in true cancer; but my examinations enable me to say that they are rarely if ever absent." (Principles of Surgery, page 339.)

The *varieties* of cancer founded on anatomicl distinctions—"encephaloid" (brain-like), "colloid" (glue-like), "hyaloid" (glass-like), and all *such like*—are of no importance in a practical point of view.

The DIAGNOSIS may deserve more attention—seeing it is so often a matter of so much contradiction and dispute—though even that is not of such *essential* importance in practice as some would represent. The highest authorities will tell you that some kinds of malignant tumors to which they refuse the *name* of cancers, "may have most of its characteristics and *be quite as dangerous.*" And I advise you to *treat* all suspicious and dangerous characters of the tumor family, as cancers, whether you brand them with the name or not. I do not wish to encourage or justify the practice *charged* against all "cancer doctors" of calling every bad sore a cancer in order to get the credit of curing it. But just as little will I sanction the very common and very easy—

Diagnosis by result. "If it was cured, it was not a cancer," or "you failed of course; and ought to have known that it was a cancer and not undertaken the case." This may do very well for the *routinist*, too lazy to think, much less act for himself. It is the necessary consequence of *his masters* having give currency to the doctrine that "cancerous" and "incurable" are synonymous terms. It is of a piece with the doctrine that *made* syphilis and mercurialism synonymous—which so long associated the idea of the disease with that of the indispensable antidote, till actually and literally the two became one and indistinguishable. For generations the profession at large never *attempted* to cure syphilis without mercury, and of course never *did;* and as what all did not do, none *could*, they loudly denied the possibility of its being done. The time for that *denial* has passed away. No well informed medical man will now say more than that mercury is the surest or most convenient antidote to the venereal poison. The possibility of curing cancer by any means in nature is still protested against by those who are called "physicians"—which originally meant and *should* still mean *students of nature.* All who profess to have succeeded in doing so, are indiscriminately denounced as quacks and imposters, by would-be leaders of the medical profession—and by the very men, not unfrequently, whose cases, abandoned because they were "cancerous," are returned "cured." They will rather disbelieve their own eyes than take another's word; rather impeach their own judgment, than authenticate another's skill; rather give up their own infallibility in all other points, than doubt that they can fix the exact boundary between the possible and impossible. They confess that they do not always know what is cancer, but still insist that they do know that cancer (if it *were* only known!) could never have been cured, and never will be cured.

The *diagnosis* of "cancer" is chiefly important as an *encouragement* to prompt and active treatment, not as an excuse for abandonment and a reason for despair. It is sometimes of conseqence, too, in a negative point of view. By knowing what is *not* cancer you may sometimes save a limb or breast from the knife, as well as the patient from the grave. A penis amputated for cancer has been found covered with superficial syphilitic warts! Even the harmless induration following acute inflammation has been mistaken for schirrus and treated accordingly—sentenced and given over to dissection, which established its innocence! However instructive these examples may have been, they have not taught all their lesson, if they are not taken as examples and *warnings*.

Hardened tumors, resulting from inflammation, may be discussed, if the proper measures are adopted, as is sufficiently shown by their frequent disappearance on some change in the patient's habits or health. These tumors, as well as simple indurations, not preceded by acute or sensible inflammation, seldom present the excessive hardness and lobulated surface of true schirrus. The tumors themselves, and the surrounding parts retain much more of their natural character. They are not so isolated as the cancerous tumor, there being generally a serous effusion into the cellular membrane around them.

Tubercles are distinguishable from incipient cancers, in being always more granular and in smaller masses, though causing much more visible *swelling* of the part in which they are formed, but not *out* of which, as is schirrus. The latter is a transformation and sometimes literally *condenses* and diminishes the part.

There are also distinctly *circumscribed* and *fibrous tumors* that may appear in various parts and be at first mistaken for cancerous; but they are more regular and rounded in shape, and unaccompanied by pain. Should the over-excited fears of the physician lead to their extirpation, no great harm will be done, as that is the only treatment *they* deserve or need.

A similar remark may be made (with some qualification, however), of such *malignant tumors*, as have most of the characteristics of cancers and are "quite as dangerous." Let them too be *really* extirpated, root and branch. It would be useless for me to dwell on *their* diagnosis, inasmuch as those characteristics and that danger ought to condemn them to the same treatment as would be *proper* for the cancer. It would be practically much safer to regard "cancerous," as synonymous with "malignant or dangerous," than with "incurable." Malignancy, be it remembered, may be assumed in its progress by the simplest ulcer arising from any cause. The *conditions* of disease are more important than *the* "causes."

The *diagnosis* of cancerous *ulcers* from all others depends chiefly on their light or livid color; their hard *fungous growth*, irregular in shape and often of the cauliflower appearance; in their rough, thick, *everted edges;* their hæmorrhagic character, and above all, their excessive *fetor*, their discharge being always ichorous and corroding.

Cancer being regarded as a degeneration or *perversion* of the original vitality of the affected part, the fibrous structure—noticed heretofore as a sort of skeleton of the schirrus, before its division into distinct cysts, has been-considered nothing but the proper cellular tissue hypertrophied and hardened into cartilage, while the more or less fluid mass it contains may be nothing but the *now* natural secretions of the new organization.

This idea of a partial *re-organization* and more or less independent vitality developed in a diseased organism, seems the only way of accounting for the peculiar phenomena of many local diseases. What to us are disease, and death, are only life in other forms and health to other beings, with whom we reciprocate the means of existence. The developments of organic chemistry, on the one hand, and of pathological and comparative anatomy on the other, are continually strengthening these views, and revealing a closer connection, not only between all orders of animated or organized being, but between all the substances and forces in nature. The expression dead or inert matter is being seen, even as a matter of science, to be only a relative or figurative expression, or to indicate an abstraction merely.

While some speculative naturalists have pretended to fix the exact place of the cancer in their natural history arrangements,* pathologists have spoken of it as a species of hydatid. Hydatids or cyst-worms are undoubtedly organized, and the principal objection to ranking cancers with them, seems to be that the organization of the former is of a *higher order.*

This idea of the entozootic or *entozoophytic* nature of cancers would be a reason (as will be remarked in treating of carbuncle) for their continuous and destructive progress, and for their timely destruction by artificial means, did we need any additional evidence of the *fact* or additional motive for adopting that *principle* of treatment.

Physicians, however, may be excused for having hitherto but imperfectly studied the natural history or *nature* of cancer, when it is recollected that they have not yet settled the dispute as to whether it is

A local or constitutional disease. The view I have just given as to the nature of cancer accords with my practical position on this question also—which, I may add, is abundantly confirmed *by practical* experience. I believe then, that there is—nay *must* be, as in other diseases—a constitutional predisposition to cancer. If this, however, is what is meant by "cancerous diathesis," it is something very different from the cancerous contamination, which occurs after the growth and maturity of the parasite. The cancer may be regarded as the *result* of general as well as local disorder; but the additional derangement which it produces, as a cause, is in the first place strictly local. Nosologically, then, "occult cancer" is to be classed among *local diseases.* The longer it continues, however, the less likely it is to remain so. It absorbs vital force and deranges the body, *on which* as well as *in which* it subsists. Matters become worse in the open stage (perhaps the externally *propagating* stage). It then injures the system, not only as a living parasite, but as a poisonous wound. Its secretions and excretions are absorbed, and the whole system is affected. It is a constitutional disease, then, just in the proportion in which absorption has taken place, or the constitution has been in other ways affected *by it and from it.* A cancerous state or appearance, before any cancer has existed, only means cancer-like, or likely to develop cancer.

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* "A great many dartrous [herpetic or impetiginous] *pimples* belong to the class of the fungous-like mosses. The *warts* of the human body are classed with the gynosporanges (?) by Meynier of Ornans. It is difficult to make out if the *tubercle* of the lungs be really a Cycoperdon, and *the cancer, a Uredo caries.*—[The Chemistry of Animal and Vegetable Philosophy by Mulder, Prof. in the University of Utrecht. Page 84.]

If these views are correct, the *treatment* of cancer, while any treatment is yet available, must be essentially *local;* though, as the constitution is morbidly predisposed in the first place, and always more or less secondarily affected, *general measures* can never be neglected with any rational prospect of restoring the patient to perfect health, and *preventing* other as well as *removing* the present local aggravations.

As to *remedial means*, I shall not, in conformity with most professors and authors, occupy your time wth telling over all the various plans that have been tried *without success*, and only suggesting others that might possibly be less *unsuccessful!* Neither shall I have to say with a distinguished teacher of our own country, "Gentlemen, I never cured a cancer, and I don't [*won't?*] believe that any other man ever did." That venerable teacher and operative *surgeon*, publicly, every year, confesses not only his impotency in curing, but the positive evil he has been led to do in operating; and reiterates his determination where he can do no good to do no harm. He refuses to operate any more, even when not responsible—unlike "our best operative surgeons," who, according to Burns, although they are "willing to perform the operation when desired, decline recommending it" in certain stages.

This operation for the *removal* of cancer *by the knife*, I do not so much object to in itself, as I do to the manner in which it is usually spoken of—both for and against. Neither its success nor its failure seem to me rightly estimated. Neither the good nor the evil following it is fairly attributable to it *alone.* Although some speak of it confidently as *the* remedy for cancer —or rather, the remedy for *schirrus* and *preventive* of cancer; others only sanction it as affording a *chance* of relief. One eminent writer actually recommends it as a palliative—speaks of the bloody, painful and dangerous operation as "an anodyne"—because, as he says, the patient's life, if shortened by it, is rendered "less miserable." "If he dies sooner, he dies easier."

The more serious *relapses*, if not the immediate dissolution, that follow the operation, are to be accounted for, more from what is not, than what is done. The practice is faulty and fails, because of the neglect of proper constitutional and additional local measures. In reality,

The knife is in no case indispensable for a successful treatment of schirrus or cancer. It may be, however, an auxiliary, in certain forms and locations of the disease. It may be so used as to facilitate your cure, if its use is followed by the proper means for a radical cure. Its sole advantage is, that it enables you to remove the whole, or large portions of the diseased mass, at once. For example, in cancer of the breast, when the whole gland, or a great part of it, is thus gotten rid of, the cure is much speedier, than if you have to wait for your applications to cause the sloughing off of the whole. Other cases will be pointed out when I come to speak of particular cancers.

This view of the subordinate availability of the *knife*, applies equally to the occult and the open cancer, though, of course, it is of more importance in connection with the latter. The stage of the disease is the all-important question, only when extirpation alone is depended on. One of the rules which have been made, is, that if even the skin participates in the disease so much that enough of it can not be preserved to cover the wound—"doubts may be entertained of the propriety of cutting!" Such a consideration is of no importance in connection with our treatment, its rule being that whenever the knife is made use of, healing by the first intention should not be allowed, much less aimed at (as is the case with the one-idea'd advocates of the knife alone). The same means have to be used, as if cauterization had been depended on, instead of cutting.

As to the results of operations for cancer, as usually performed, little can be known with certainty. From one account kept by Monroe, of Scotland, out of sixty persons operated on, it was found at the end of two years that the operation had been successful in only four. But how few of the surgeons "willing to operate when desired," or operating as a matter of course, in public amphitheaters for the display of such scenes, ever trace out the ultimate effects of their handy work! The statistics of death by surgery are suspiciously scanty.

LECTURE XX.

CANCER MORE PRACTICALLY CONSIDERED.

RATIONAL TREATMENT, contrasted with hopeless palliation—"New Principles and Agents"—Excision *and* Cautery of Schirrous Tumors—Failure of the knife alone—Cauterization of open cancer—Preparation of patient—Subsequent Measures—Cases permanently cured—Other local applications—"Cancer plasters and specifics"—Constitutional means—Sulphate of Zinc, its success, safety, and advantages—Case.

TO COME at length to the PROPER MEDICAL TREATMENT of cancer, the principle of treatment I shall give you, is as rational as its means are simple, and its results satisfactory. I can not help stopping, however, to quote once more from an author,* who has specially studied the disease, accurately described it, and clearly told its natural history and end—ably criticising, by-the-way, all methods of treatment but the right one—that is, cauterization and suppuration, kept up by proper means (not the red-hot iron, much less arsenic or corrosive sublimate).

His "indications of treatment" are soon told. They are to "abate pain, lessen fetor and check hæmorrhage when it occurs;" or, as he states it elsewhere more explicitly, having no confidence in any means even for retarding the fatal progress of the disease, "all that we can do in the open stage of cancer, is to palliate symptoms, and make (!) the patient die as easy as possible.

In criticising the repeated and re-repeated *failures* of arsenic, mercury, hemlock and certain other once *perhaps* reputed cures, this writer makes one suggestion which good sense might have been supposed not to need. He expresses himself dissatisfied that the old remedies should be so persisted in, rather than search made for *new*—which could not, at all events, be more injurious or unsuccessful. "I repeat," he says (page 349), "we have yet no cure for cancer; and if they exist it must be sought either in *agents which have not yet been tried*, or in some *principle* which has *not yet* been *developed.*

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* Burns' Principles of Surgery, Glasgow, pages 353 and 354.

The "principle" I shall present for your adoption has been already fully "developed" in the practice of many of our number, and the "agents" I shall recommend for carrying out that principle, *have been* satisfactorily "tried" in hundreds of cases. Some few of these cases I shall mention particularly, others have been occasionally reported in the pages of the Eclectic Medical Journal or the Medical Reformer. The subjects of many of them are living in our midst, to speak for themselves, and confirm their testimony by a reference to the eminent surgeons and physicians, whose diagnosis of "cancers," brought the case into our hands.

When *you* are called to a case of cancer, your first consideration will be to make out a correct diagnosis, though that is not so essential a point in your treatment as in that of others. Were there any doubt, you would take care to err on the safe side. All *cancroid* ulcers or tumors, moreover, require to be treated on the same general principles and with many of the same articles as the most undoubtedly carcinomatous cases. [For the peculiar symptoms of schirrus and true cancer, see the last Lecture.]

If your case be still but an "occult cancer," or in the *schirrus stage*—when excision is usually prescribed as the all-sufficient as well as only remedy—you may use the knife, if the patient is willing and the tumor so situated that it can be conveniently cut out, or a considerable part of it cut off. Take care, however, to remove every portion of the skin that is diseased or discolored, and every accessible part of the flesh that seems in the least affected. And *after* this use of the *knife*, for partial or complete removal of the morbid matter, make the same applications to the fresh surface as though the cancer had opened spontaneously. Every surrounding lymphatic gland or other part that seems affected should, if possible, be touched with the caustic potash. Then get up and keep up suppuration from the whole of the incised surface by means of the mild caustic, and treat the case in every respect as I shall direct you for the cancerous ulcer.

Sometimes the *ligature* may be more convenient, or more willingly submitted to by the patient, than the knife. It must be applied in the same manner as for other tumors. (See cut of the eight-tailed ligature, page 205.)

Both these means, however, are mere auxiliaries, and your dependence must be very greatly, if not altogether on the caustic potash.

When a cancerous tumor has to be removed by cauterization alone, apply the pencil of potassa so as completely to surround as well as open the schirrus mass. Let it penetrate into the very center from several different points. The elm poultice should be applied immediately after, and constantly continued. If the patient can not bear so extensive an operation, the caustic can be applied from day to day to additional parts, until all is effectually destroyed, taking care to excite and keep up suppuration as in the former case. Your caustic ulcer is, in this case, to be treated on precisely the same principles as if the schirrus had been left to become of itself an open cancer; though the same extent of constitutional medication is not likely to be required as after the formation, and more or less absorption, of proper cancerous matter.

The true secret of the *failures* of the knife-operation, even in the early schirrus stage, is that small portions of more or less diseased substance are left behind; whereas, the immediate application of the caustic, whether with or without the knife, disorganizes every part with which it comes in contact; and the milder caustic afterward changes the action in parts that may be less affected, and keeps up a drain that effectually withdraws contamination from the system at large.

If your case is one of "open cancer," or already in the ulcerating stage, the *first* thing, when you are called on to undertake the treatment is, if the *pain* and *irritation* are very great, to allay these as far as practicable by any soothing application that seems to suit the case. But very frequently you will fail in attempting this palliation; and this is of the less consequence, inasmuch as, generally speaking, you need not delay for such preparation, but proceed at once to your

Main operation. Apply the *caustic potash* freely to the whole of the cancerous surface. If the patient can bear it, cauterize, at the first application, every trace of morbid matter, and the sound parts around it to a considerable extent. Extinguish every vestige of vitality in the morbid mass. Be sure to penetrate with your burning pencil to the bottom of the tumor, or fungous mass, striking in from different directions. It may be necessary, with some patients, to prepare them for the operation by administering the

Ether or Chloroform. Of the two, I much prefer the ether. (See Introduction, page 20). Ether may be used whenever the state of the patient is such that there would be *more danger* from the pain itself than the pain-queller. Generally, however, anæsthetic and narcotic agents may be dispensed with.

Prepare the patient's *mind*, rather than his body, for the operation. Do not attempt to cheat him into acquiescence. Exaggerate, if possible, the sufferings he is to undergo, and the effort he must make. Most people have sense enough to choose pain rather than death, and to bear it resolutely, if their pride and self-esteem are stimulated by the confidence and expectation of those about them. This, at least, is my principle of moral medication; and I have had every reason to be satisfied with its result. I have not unfrequently had patients, after submitting, perhaps for an hour, to this "burning alive," without flinching or groaning, open their mouths for the first time, after I had got through, to express their fears that the operation had not been carried far enough, because they had felt it so much less than I had given them reason to expect. I have told them beforehand that, unless they had fortitude enough to bear to have their arm chopped off, inch by inch, on a block, or to hold it out like the Roman youth of old, while it burnt off on the altar, they need not expect to have their cancer cured—that its moral "final cause" was to develop such heroism in them!

After the application of your caustic, *dress* immediately, and constantly thereafter, with the poultice of finely pulverized

Ulmus fulva. This admirable emollient and *absorbent* should be renewed as often as every six hours. Let no discharge once made be re-absorbed into the system. Examine-carefully, at every dressing, and,

If *any portion* of the morbid growth appear to have *escaped* the caustic, re-apply the potassa fusa as soon as the eschar begins to slough off.

Let the *sore* also be *washed* freely with a solution of the mild caustic; and, as the parts are exposed by the sloughing, let the dry powder be sprinkled either on the sore or on the face of the poultice. This may be done as often as once or twice a day. It may, however, cause so much pain that the powder, or strong solution, can not be applied oftener than once a day.

In such a case, let a weaker lotion of the same be used in the intervals of the stronger applications. If, however, any portion of the tumor and proper cancerous growth *remain*, and do not yield to the sesqui-carbonate, *repeat* the *caustic* potash, continuing the elm, etc., as before directed.

These applications, continued or repeated, till all the truly malignant structure is destroyed, will, in the majority of cases, *cure even the ulcerated cancer.*

In no case, however, must you trust to the simple emollient dressings, after the first cautery, without the daily application of at least the mild caustic, until the healing is perfect and complete.

Some ADDITIONAL LOCAL MEASURES will require notice, before proceeding to the proper constitutional treatment.

To correct the very disagreeable *fetor* that very generally attends, the pyroligneous acid may be applied, either in alternation with the alkalis, or the latter may be discontinued altogether for a day or two. Not unfrequently this acid or others will be indicated, by the state of the parts, independently of any fetid discharge.

When the diseased parts have been removed, the healing process will sometimes go on but slowly, or the sore seem to remain altogether stationary, although wearing a healthy appearance. In such cases, change your alkaline applications for *acid.* I have found the expressed juice of cranberries to act most favorably as an alterative stimulant. Healthy granulations sprout up immediately after its application, and continue to grow very rapidly under its use. After awhile, however, the sore may get accustomed to this, and again become indolent. Currant juice may then be effectual, as I have occasionally found. The two may be alternated with each other, or with the pyroligneous acid, occasionally reverting to the alkaline applications. You must bear in mind that so long as any fungous growth continues to appear or remain, your main reliance must be on alkalis. In short,

During the *healing stage*, after the cancerous character has been all removed, the same general principles must govern your treatment, as in other *ulcers*, not occasioned by malignant disease, observing carefully, however, that some of the malignant appearances do not return before the cure is complete.

There are *other* CAUSTIC APPLICATIONS in use and credit, besides those I have recommended. Among them I may mention the inspissated juice of the sorrel (Rumex acetocella), that of the red clover (Trifolium pratense), or the salts of the ashes of red oak bark. Any superiority of the last-mentioned preparation over the alkalis already directed, I have never been able to discover. It is stronger than the pearlash, and disorganizes the parts to which it is applied more slowly than potassa fusa, but not less surely. The two former articles are generally used in the form of a plaster, and kept on as long as the patient can endure them, or until the cancerous formation is entirely destroyed or changed. When this essential object has been attained, or the cancer "eaten out," as the expression is, by such means or any others, the case may be followed up by the measures before recommended. Failures with such "cancer plasters" are probably more owing to the neglect of proper *after*-treatment, local as well as constitutional, than to any defect of power in those applications themselves.

The most frequent cause of *failure*, in almost all cases of "specific cancer-curing," is, perhaps, the want of proper attention to the removal of the pus as soon as it forms. Hence, the prominent place I have assigned to the Slippery Elm Poultice; and the necessity for enjoining its constant use and frequent renewal. It prevents all further contamination of the system, and, in connection with the alkaline treatment, purifies it from the taint already received. The long continued use of both these means is our best safeguard against relapse. This drain from the original seat of the disease is not, however, our only measure of protection; for

In connection with the plan of local treatment, above given, as esssentially "*the* cure" for cancer, and in conformity with my views of the nature of the disease, I attach much importance, in certain stages, to

The Constitutional Remedies.

Whenever the disease has run on long enough to make inroads on the patient's system, we shall find that the liver is deranged, generally torpid, the skin in a state of inactivity, and the kidneys more or less affected. This will be especially, and sooner the case, if the individual is of a scrofulous habit. A general cachectic condition is developed, which may then properly enough be called the *cancerous diathesis.* For removing this condition, the same

Attention to the *surface* is required, as in other forms of chronic disease. Bathing is quite as important a consideration as *internal* medication. The best purgative or aperient, will generally be found in podophyllin—or this in combination with leptandrin, or in the extract of Euonymus atropurpereous, especially if there be much debility.

The *bowels* will have to be regulated, and an occasional active cathartic is generally necessary.

Alteratives must not be omitted. The Scrofulous Syrup (Form No. 14) will often be indicated. I have used with much advantage a syrup composed of equal parts of Burdock and Yellow dock (Arctium lappa and Rumex crispus), Ampelopsis quinquefolia and Scrofularia Marylandica. Let this compound be made strong and taken frequently. At other times, I have prescribed a syrup, or strong infusion of the Corydalis formosa. This may be combined with Stillingia sylvatica, either in the form of infusion, decoction or syrup. These two articles exert a powerful influence in removing constitutional taint, and are perhaps the best constitutional remedies known for cancer. The Gaultheria hispidula (or creeping winter-green) is known in many parts of the country as the "cancer winter-green," from its supposed efficacy in removing the carcinomatous taint from the system. I may further mention, as an article that I have myself used with advantage. the "canker lettuce" (Pyrolia rotundifolia). Some or other of these articles should always be given, and alternated with each other. After the system becomes accustomed to one article, it should be discontinued, at least, for a while. After a time it may have its full effect again.

Diuretics and *diaphoretics* are not to be overlooked. The function of the kidneys is too much neglected, especially in cases where there is constitutional taint. A rather more than natural activity of the kidneys should be kept up in all such states of the system. The articles recommended for an Alterative Syrup, have a tendency to effect this object; but more may be done in this way, by supplying the patient with a pleasant beer as a constant drink, into which such articles enter largely, as burdock seeds, master-wort (Angelica atropurpurea), spice bush (Laurus Benzoin), and dwarf elder (Aralia hispida). While this is made a common beverage, let the syrup before prescribed be still taken three times a day.

SULPHATE OF ZINC.

I have concluded that I ought to say something separately of the use of this article. Long after I became satisfied of its efficacy in the removal of cancer, I continued nevertheless suspicious of it, on account of the effects I feared it must have on the constitution. I must confess, however, after suspiciously and critically watching its effects, in the practice of others in numerous cases, I have been unable to detect any bad results attributable to its absorption, while as a local application it is unsurpassed.

Sulphate of zinc is an application suited only to open cancers. In fact, applied to the skin it would have little or no effect. If, then, it is desired to make use of it before the ulcerative stage, first freely open with the caustic potash; holes may be made with the latter from the surface nearly to the center, and these *filled* with the sulphate of zinc, a poultice being then applied as in other cases. Applied in this way, this article will occasion severe pain to the patient, but

Will rapidly *disorganize and dissolve* the diseased formations. It will, however, have the same effect on healthy parts. Hence, if used at all, it must be used with *caution*, especially in the vicinity of *large blood vessels*.

The *advantage* of the sulphate of zinc over the potash, is, that instead of producing an eschar which is tough and frequently some time in being thrown off, it gradually *dissolves* the diseased mass which passes away in the fluid form, resembling thin starch or pus in consistency, leaving the surface of the sore in a healthy condition, from which granulations immediately commence. After the zinc, the sore should still be treated with solutions of the sesqui-carbonate of potash, and the powder of the same. Sometimes, however, neither this, nor the caustic potash at the beginning, is necessary, as the natural openings are sufficient for the introduction of the sulphate of zinc, and that alone may keep down all tendency to fungous growths. The elm poultice should be constantly used and often changed, whatever the other means.

The article in question may even be applied with proper precaution, when the mouth or some other cavity is the part affected. I have seen it safely and successfully used on the inside of the jaws, the mouth being filled with cotton. I have also seen it used with good effect in several instances of cancer of the penis.

In the most extraordinary case, the glans penis was four or five times the original size, and very hard, almost of a callous firmness. The meatus urinarius was dilated to three times its usual caliber, its mouth constantly gaping open, and lined with a cartilaginous wall for an inch or an inch and a half of its length.

This dilated portion of the meatus was filled with the sulphate of zinc, and the hardened portion round the edge on the extremity of the glans was also covered with it. This kind of dressing was kept up for five or six hours the first day, and a shorter period for several days in succession, although it produced the most excruciating pain. At that time, it was found that the part had considerably decreased both in size and solidity, and by a few weeks' dressings with the mild potash and poultices, a perfect cure was effected; the unfortunate organ being reduced to its proper limits. The father of this patient had died, when about the same age (thirty-five years), of the same disease, in the same part.

I am aware that many scrupulous practitioners will, at first hearing of sulphate of zinc, have serious objections against it. To such I have only to repeat, that some years' careful observation has convinced me that it *can* be used under proper precautions, not only with great advantage, but without any discoverable disadvantages. The readers of the Eclectic Medical Journal will recollect a valuable article on the subject of Gangrene, by Professor Newton, in which he puts a very high estimate on the application in question. In such cases I know that it has been extensively used, without any disagreeable result.

[The principles laid down in the lecture are in the main correct. Yet further experience has, to some extent, changed the treatment. Sulphate of Zinc, just described, was first employed as a secret remedy, and the recipe sold for a high price. It was combined with Venetian red, and so disguised as not to be recognized, and no doubt answered an excellent purpose in some cases; but it was not *the* cancer cure that was represented. Professor Newton employed this for a considerable time, but becoming acquainted with the more powerful Chloride of Zinc, he gave the preference to it.

The Chloride of Zinc is almost always employed in the form of a paste. The salt is deliquescent, and if the bottle is allowed to stand uncorked we have a saturated solution. Take of this a sufficient quantity, and add powdered Hydrastis until the desired consistence is obtained. I prefer the following formula, however: ℞. Chloride of Zinc, ℥ij., Pulv. Sanguinari ʒj., Sulphate of Morphia grs. x, Water qs. to form a paste. In using this, it is spread upon soft leather, and applied directly to the part, allowing it to remain on from four to eight hours. If the pain is too intense, a hypodermic injection of morphia will mitigate it in a very marked manner. It may thus be applied for three or four days successively, and then followed by a slippery elm poultice until the slough is removed, when its application will be again commenced. Chloride of Zinc is also employed as an injection into the cancerous mass, by means of a syringe having a sharp, steel nozzle; a saturated solution being used, it is carried to the bottom of the cancerous growth.

Carbolic Acid may be employed for the removal of epithelital cancer, but is not strong enough for other varieties. Chromic Acid has also been used for the same purpose.

A new and painless treatment has been employed, to a considerable extent, within the last few years, and has proven very successful. Though containing an agent that we object to, yet if found more efficient than other remedies, the objection should be waved. It is a secret treatment, and the secret was well kept until it got into my hands. The object is to employ Arsenic in such small quantity, and so gradual, that while its specific action on the growth is obtained, the general system is not affected. To accomplish this, a combination is made as follows: Take of Solution of Persulphate of Iron, and Liquor Ammonia, equal parts, pour them together, and allow the mixture to stand an hour. The iron precipitating, carefully pour off the super-natent liquid, and throw the pasty iron on filter paper, and allow it to drain until it attains the consistence of an ointment. Put it in a mortar, and triturate with it half the quantity of lard, and when united, add Arsenious Acid in the proportion of from four to ten grains to the ounce of ointment.

I have employed this combination in my practice to a considerable extent, and am very much pleased with its action. It is necessary that the cancer be open, or that the skin be removed with other escharotic, or sometimes a fly blister will answer. The ointment being thickly spread on strips of cotton, is applied to the cancer every day until the growth is killed, and separated to such an extent that it can be lifted out with the dressing forceps. From three or four days to as many weeks, depending upon the extent of the disease, is occupied in the application.

No matter what the treatment may have been by which the cancer was removed, much will depend upon the process of healing, whether it returns. At first I use a simple water dressing, and sometimes this is continued until the part is closed. But in addition it is washed once or twice daily with a strong solution of Tannic Acid. The mild Zinc Ointment is also employed in some cases in preference to the water dressing, or at a later stage.]

LECTURE XXI.

CANCER LOCALLY CONSIDERED.

CANCERS of the *Eye*—Their progress and time for treatment—Of the *Lip*—Their origin in cracked lip—Prospects and fatality—Early treatment simple—Of the *Tongue*—Description—Mercurial variety—Mild caustic generally sufficient—Other measures—Of the *Breast*—Frequency—Origin and progress—Cause by *cross*-lancing the nipples—Of the *Rectum*, susceptible of treatment—Of the *Penis*—Description—Medical treatment more convenient than amputation—Of the *Testicle*—Frequency—Excision necessary and effectual—Cases.

PARTICULAR CANCERS.

INASMUCH as I have entered so fully into the description and treatment of cancer in general, it will here be only necessary to mention such particulars as arise from the peculiarities of the parts in which the disease originates, or to which it extends.

CANCER OF THE EYE

Usually begins upon the external surface, involving the cornea lens, humors and membranes in one mass of disease. The globe first becomes enlarged, causing excessive pain, and in a short time the cornea, or the sclerotic coat at its junction with the cornea, bursts; and a fungous growth sprouts up, the eyeball then becoming as large as a hen's egg, completely filling up the orbit and projecting out beyond the lids. The fungous in the eye is sometimes dark, sometimes of light color. Profuse hæmorrhage will occur from the slightest touch, or even spontaneously from ulceration. In this stage of the disease the patient rapidly sinks, and, if *his cancer is not cured*, dies of exhaustion or from the brain being directly involved in the disease.

Of course the disease will hardly be known to be cancer, before the eye is irretrievably ruined; and any treatment may then be considered successful, which even saves the unaffected eye and life of the patient.

The *eye* may be *removed* with the *knife*,* and the proper applications made to any surrounding parts already contaminated; or the whole business may be changed by *caustic alone*. After this removal of the eye-ball, and, with it, of the principal portion of the cancerous structure, the surface of the socket must be treated as directed for other parts. The sesqui-carbonate of potash will generally be a strong enough application. My plan has been to have a poultice of elm powder tolerably stiff, and molded so as to fit the cavity; then sprinkling the whole surface with the powdered caustic, place it in the socket, thus bringing the caustic into contact with each point, the slightly moistened elm at the same time absorbing all matter as fast as it is discharged. Other applications, such as acids or even salve, can be introduced by the same contrivance.

But after the constitution has suffered much, and there is evidence of the brain having been affected, the chances are against the recovery of the patient, under the best treatment that can be adopted. When there is still any considerable amount of constitutional vigor, great hope may be held out, even if the local injury is extensive.

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*If such an operation is attempted, the utmost caution should be observed in the diagnosis, to avoid the recent and rather celebrated blunder of a professor of surgery in one of the principal Western Medical Colleges, who very boldly extirpated an eye and killed his patient in the presence of a State Medical Society, and AFTERWARD discovered that there was no malignant growth in the part removed to justify his fatal operation.

When a cure is effected, the orbit will not always be completely filled up again. An artificial eye is then the only means of avoiding great deformity. In most instances, however, there will be a sufficient amount of fleshy granulations to prevent the ghastliness of mere "holes where eyes should be."

Cancer of the Nose

is not of common occurrence unless as a result of neglected or maltreated polypus. When cancer proper occurs about this part, it generally commences on the lip or the alæ.

Cancer of the Lip.

This very common affection often appears at first as mere *fissure* or "cracked-lip," which, when the weather is cold is very troublesome to the patient. It will commonly heal up in summer and re-appear in winter, or on sudden changes of the weather. It may thus continue for years, a mere periodical complaint, the patient having occasionally to wear a patch upon it to shield it from the air. At last it fails to heal again, and the *lip* gradually *enlarges*, a tumefaction rising all along the fissure. It is at this stage of the disease that the patient generally thinks it worth while to apply for medical advice.

In other cases, however, the disease appears from the beginning in the form of a small *tumor*. It looks on the red lip like a common squirrel *shot*, both in size and color; it will also roll under the finger when pressed upon.

This little tumor is for a time devoid of *pain;* but if pressed upon or handled it will easily become *irritable*.

As it increases in size, it becomes more and more firmly attached to the surrounding parts. In some cases, it is immovable, even from the beginning, being deeply imbedded in the muscles. As it approaches the surface, it ulcerates, giving out a fungous growth, which sometimes increases to a monstrous size, so as to cover the whole mouth and chin. The upper lip is seldom the seat of the disease.

A third form under which it may make its appearance is that of a "scaly scab," or squamous little ulcer—one of the forms described under the head of LUPUS.

Any of these forms of lip disease will, if not arrested, extend to other parts of the face, throat and neck, and prove certainly *fatal.* The *glands* about the mouth and throat become early affected, and even the *brain* is not always long secure.

If the treatment we have directed be adopted before these last mentioned occurrences, *no difficulty* need be apprehended in completely eradicating the disease. If the jaw has become involved, the case will be somewhat more troublesome. But while the disease is confined to the lip, no matter how malignant and obstinate it may appear, the *caustic applications* will almost invariably succeed; while on the other hand, the *knife* alone, though occasionally successful, is not at all to be depended upon; failure, according to the best authors, being the rule, and cure the exception.

CANCER OF THE TONGUE.

This organ is not unfrequently attacked with a species of eating ulcer, which, although it resembles it, can not properly be called a cancer. True cancer, however, may attack this as well as other parts of the body.

A peculiar species of cancer of the tongue is the *mercurial;* and this is not the least difficult and tedious to manage, owing to the contaminated condition of the whole system which invariably exists in such cases. It is more apt than all others to reappear when seemingly cured. It is worth observing, that the medicine of those who say they can not *cure* cancer, can *cause it.* In some cases the simple ulcer that existed before, seems to become cancerous under the mercurial influence. The whole tongue may become very much enlarged, having small tumors at different points; sometimes of a hard and semi-cartilaginous feel, at others of a spongy structure. But generally there are deep fissures or cracks of an irregular form upon one or both sides of the tongue, rarely in the center. The edges of these fissures are always hard, having a bluish or purplish appearance, and their surface covered with a tough, yellowish, or thick gray-looking pus.

At other times we have a hard rough tumor with a broad base of a warty appearance, situated about the middle of the tongue or toward the tip, becoming after a time a ragged, ill-conditioned sore of a fungous character. It then bleeds very easily and occasions a sharp lancinating pain, extending to the throat and to the base of the skull.

This latter form of the disease, if not arrested in the early stage, is very liable to prove fatal, owing to excessive irritability and hæmorrhage, and the impossibility of continuing the proper applications for a sufficient length of time. But of the former cases more hope may be entertained.

It is not generally necessary to make any application so strong as caustic potash. The *milder* alkaline carbonate is found all-sufficient. The whole surface of the ulcer should be covered once or twice a day with the dry caustic powder, and a pledget of cotton or lint, so as to fill up the fissures and absorb all fluids as fast as they can be formed. This should be removed every three or four hours and a fresh one applied, the sore being washed each time with soap and water. At first the surface will turn dark-colored; but in a few days—occasionally during the first twenty-four hours—all the discolored part will pass off, together with all the adhesive pus. The raw and healthy surface then exposed should be treated in the same manner from day to day, though with less and less of the caustic. If proper constitutional remedies be at the same time used, it will soon heal. If it have

Hard and *callous edges*, which do not yield to the mild alkaline caustic, the caustic potash must be used. But in applying the latter, take care to have the neighboring parts well shielded, and the whole mouth filled with cotton. Then touch the portion to be removed with the pencil—but slightly at first. After a few moments, wash out the parts with vinegar, and apply your dressings as in the former case. The caustic potash may continue to be applied as long as it appears necessary for the removal of such diseased portions as can not be removed by other means.

I have seen the Sulphate of Zinc applied with good effect in this, as in other cases; but, of course, great care must be taken that not the slightest portion be swallowed, as it might affect the patient severely.

If the patient be suffering under mercurial influence, which is not unfrequently the case, with or without the syphilitic taint, great attention should be given to the appropriate constitutional treatment. But all such cases of long standing are of very doubtful prognosis.

Where the tumor has not already ulcerated, *excision* by the knife is now abandoned by most surgeons. The *ligature* is generally relied upon instead, and may prove effectual. This is applied by passing a needle, armed with a double thread, under the center of the tumor, and cutting the loop, so as to leave four ends. The two ends of each string are then to be tied, one pair at each side, so as completely to strangulate the mass. [See Part II of the course.] In a few days the tumor will slough out. If the wound does not then heal kindly, more or less caustic applications may still be necessary to complete the cure.

But where the tumor has become ulcerated, no dependence can be placed upon the ligature, any more than the knife.

Cancer of the Breast.

Carcinomatous affections of the female mammæ are perhaps more common than of any other portions of the glandular system or of the body. Women who have nursed a great many children, and such as have arrived at the age when the catamenia cease, without having had children, are the most liable to suffer from this disease, though it may occur at any age. It has occasionally been developed in girls as young as sixteen.

The first appearance of genuine schirrus of the breast is usually as a *small tumor* near the nipple, which at first appears to be loose under the skin, and nearly insensible.

This tumor may be *stationary* for years, while, at other times, it *grows* rapidly. In those cases which are considered most malignant, it may acquire a very considerable bulk in a very short period. Commonly, after having grown to a moderate size, the tumor becomes *shrivelled* or contracted. The nipples are thrown inward, and buried beneath the surface. The skin becomes of a dark leaden hue, and is closely adherent to the tumor. The whole breast assumes an irregular shape, and feels as if it were filled with knotty, hardened tumors, of an irregular form. The pain becomes lancinating, frequently extending into the axilla, and even through the chest. As the disease advances, other lymphatic glands, besides those of the axilla, become involved, particularly those of the neck.

Eventually, the skin over the tumor yields; a thin sanious matter is thrown out through the *ulcer* that is then established. This assumes, at first, the form of a fissure or crack, and becomes partially filled with fungous growth.

In some cases, the patient sinks, from the cancer affecting vital organs, particularly the lungs, even before the stage of ulceration. In others, life may be protracted ten, twenty, and even thirty years, before the slow but steady progress of the disease cuts it short.

Cancer may be *artificially caused.* A simple mammary *abscess* may be made to assume all the malignancy and danger of "true cancer" from schirrus, by ill-timed and improper *lancing*, especially where the incision is made ACROSS the course of the lactiferous ducts, so as to divide a considerable number of them. Out of some fifteen or twenty cases of mammary cancer, into the history of which I have inquired, there were *only two* that had *not* been thus operated on, and did not have the evidence of the bad surgery in the cross-cut scar! In all these cases, the first appearance of the disease presented only the symptoms of ordinary mammary abscess.

As to TREATMENT, it is unnecessary for me to repeat what I have said as to the treatment of cancers in general. Unfortunately, in most cases to which you are called, the whole gland will be so involved as to render an attempt to save any portion of it impracticable. Consequently your applications should be made with the understanding that the breast must be lost. To *facilitate* its removal, the knife may be used. Never, however, depend, or sanction dependence on the knife alone. The number of cases operated on, and the paucity of successful results, ought to be sufficient to warn us all against any such dependence. Better, by far, rely on your caustics alone, than on the knife alone. In no case is it anything but a subordinate and auxillary means of cure.

CANCERS OF THE UTERUS AND RECTUM.

The former has been treated of fully in connection with Polypus of the Uterus (Lecture XVIII, page 215).

Cancer of the Rectum is spoken of as emphatically and necessarily incurable, because not accessible to the knife; but, with the views of the disease and treatment I have given, you will not regard it as any more necessarily fatal than cancer of the mouth or womb. Though I have never had a case of genuine cancer of the rectum—should a case occur, I would unhesitatingly recommend the same manner of making applications as for Fissure or Stricture of the Rectum, and expect the scirrhosity to be overcome by the same means, as in other parts.

Cancer of the Penis.

The prepuce and the glans are the parts most commonly affected. A small tumor, resembling a wart, first appears. Its base is generally broader than its surface, and as it is deep seated it looks much more like a continuation of the substance of the glans, than any outgrowth. By this circumstance it can be distinguished from a venereal tumor, the latter having an evidently diseased character, and only a small neck, the base always smaller than the apex. The reverse, in all respects, is the case with the scirrhous or cancerous glans, presenting itself only as an irregular tumor, and growing slowly. It finally ulcerates, and throws out fungous growths as in other cases; and the matter discharged becomes fetid and bloody. As the disease progresses, it involves all the surrounding parts. It may extend along the body of the penis up into the abdomen, or still further down toward the rectum, destroying especially all the inguinal and adjacent glandular structure.

In other cases, Cancer of the Glans Penis assumes more of a chronic character, the glans enlarging very greatly, becoming hardened, and discharging by fistulous openings into the urethra, at the base of the glans, and then out through the meatus urinarius, the cavity of which becomes very much enlarged, having hardened callous edges, very painful on pressure.

The treatment in these cases is very simple. They need no knife. So far from amputation of the penis being the only remedy, as is sometimes represented, it is never necessary, and is but a mischievous, unscientific proceeding—an ostentatious species of quackery. There is an advantage in that part being the seat of the disease, as your remedies can be the more conveniently applied. I have seen the Sulphate of Zinc used in these cases with remarkable success.

If there be much pain, inflammation and swelling, apply fomentations and emollients before caustics; emollients, indeed, should be continued in connection with the whole of the caustic treatment. This treatment is here plainly preferable to that of the knife, because, besides other obvious reasons, if the ulcer so treated heal, its cure is certain; whereas, after amputation, relapses in other parts are frequent, and sometimes even the stump refuses to heal. (For a case cured by the sulphate of zinc, see page 248.)

CANCER OF THE TESTICLE.

The cancerous testicle appears externally considerably enlarged, rough and heavy, like a lump of lead. As the disease progresses, the Spermatic Cord and Inguinal Glands become affected, though it may exist for a long time before there will be much suffering. The first symptom is a constant lancinating pain, extending along the cord and through the loins down into the thighs. This tumor does not usually attain a very large size, though in some instances it is an enormous burden and deformity. The scrotum becomes inflamed, and sometimes ulcerated, throwing out the peculiar cancerous fungus, which easily bleeds. The distinguishing features of the case are the hard, rough feel, and the dull, leaden weight.

In this case, the knife for once is the instrument of cure. From the peculiar structure of the part, it, like the breast, is doomed to inevitable destruction from the moment it is affected with this form of disease. And fortunately, its isolation from other parts of the body renders its removal a very different affair from that of the breast. [For the Operation of Castration, see Part II.] If, however, the disease has been communicated to the contiguous membranes, or to the cord, the case will have to be treated in the same manner as cancer elsewhere.

In one case operated upon by my colleague, Dr. Morrow, that of Mr. K., of Lockland, in this county, the diseased mass that was removed was found the day after the operation, to weigh five pounds and three-quarters. In this case, the cord was involved in the disease, so that to complete the operation, a dissection had to be made through the external up to the internal abdominal ring.* This was the largest *scirrhus testis* I have ever seen. The parts healed kindly after the operation, and the cure was effectual.

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* The patient had been examined a short time previously by a professor of the Ohio Medical College, and several other distinguished physicians, who decided that the case was incurable, except by an operation; and that no man in the country, except Prof. Mussey, could perform the operation.

LECTURE XXII.

ANTHRAX, OSTEO-SARCOMA AND FUNGUS HÆMATODES.

ANTHRAX, a malignant boil?—Boil, "a miniature carbuncle!"—Early symptoms and progress—Persons and parts liable—Prognosis not discouraging—Size and character—"Equivocal" vitality hypothesis—Practical bearing—Anodyne effects of caustic potash!—After treatment, local and constitutional.

OSTEO-SARCOMA, bony or bone Cancer—Symptoms—Old School prognosis and prescriptions—Extirpation or amputation not to be depended on—Reformed treatment—Cases.

FUNGUS HÆMATODES, or soft bleeding Cancer—Early symptoms and progress—Ulceration—Structure and peculiar appearance—Parts involved—Parts and persons most liable—Diagnosis from aneurism, ordinary scirrhus, etc.—Treatment to be timely—Criteria for undertaking—Excision and *subsequent* measures—Directions for cauterizing—General measures, etc.—When too late to cure—Cases.

ANTHRAX OR CARBUNCLE.

ANTHRAX is an unhealthy inflammation of a circumscribed portion of the cellular tissue and integument, attended with more or less mortification and sloughing.

Illustratively, it might be said that a carbuncle is a malignant boil, that is—still more properly interpreted—"the worst kind of a boil," one that "won't get well." Such expressions, however, must be regarded as *but* popular, as rather indicating analogies, than stating facts of identity or direct connection. Such a "definition" will not stand the test. You can not safely reverse it, and make the two things compared define each other in true dictionary style. Yet this is what one surgical writer, in high repute, has actually ventured on—"Boils," says Mr. Druitt, "are miniature carbuncles!" This is the reductio ad absurdum of such comparisons. Because *some* human beings, according to theology, may be perverted, perhaps *become* evil spirits, *therefore* every infant at the breast is a miniature devil!

Carbuncle and *boil* differ as health and disease, life and death, positive and negative. In the one, nature is doing her best for us; in the other, her worst. [A common boil is plainly, if any thing is that ever occurs in the organism, a successful effort of the " vis medicatrix ; " a carbuncle is something worse than an unsuccessful effort of such a power—to characterize it, you must refer it to a *vis necatrix*. It scarcely differs less in its symptoms than its termination ; for

Anthrax commences as a livid red swelling, exacting attention by its burning, smarting pain, which continues, worse and worse, to an unbearable degree. Its distinction from a common healthy phlegmon becomes more and more marked as it progresses; and it is only in rare instances that it does not show its true character from the beginning. As an abscess, it has no particular source, or central " core," and, as an ulcer, it may be said to commence " fistulous." As soon as the more ordinary symptoms of local inflammation have subsided—or without their having gone through their regular stages, vesication commences ; and when it bursts, instead of a truncated cone with one opening or crater, as in the boil, there is a flat top with several sinuses. From their orifices, instead of healthy, consistent pus, an acrid fluid exudes, resembling thin gruel, and excoriating all parts with which it comes in contact. The parts where they originate seem to be in a state bordering on mortification.

Anthrax always implies an unhealthy and debilitated, if not an exhausted condition of the system. It rarely occurs in any but aged persons, and those, too, whose constitutions have suffered other ravages than those of time. Hard study, anxiety of mind, trouble, and consequent depression of spirits, intemperance, etc., are enumerated among predisposing or remote causes.

Severe *constitutional* symptoms generally attend. The digestive function is always more or less deranged, and nausea very commonly complained of. Under great suffering and attending fever, loss of sleep and consequent prostration of strength, the patient rapidly sinks.

It is generally located on some part of the back. The next common seat is the head, where it is still more dangerous, though not " almost surely fatal," as some of the books would have it.

The *prognosis*, indeed, need not be so alarming as it is generally made. Most patients would probably get over it at last, even without treatment. Still it is always a most distressing, and occasionally a fatal affection.

No time should be lost, and no means spared to mitigate suffering, even if we could not arrest the process of "local death" and prevent its becoming general. We can generally have the satisfaction of effecting both these objects, and by the same means. The extraordinary pain is a "natural call," an alarm of the whole endangered organism, a true, "indication of cure."

The boil theory or metaphor, must not lead you to limit the idea of carbuncle to the ordinary dimensions of healthy phlegmon. You need not look out for some less familiar or more learned name, when this species of malignant tumor presents itself of an enormous size, which it often attains with a mushroom rapidity of growth. I have seen one on an old lady's back as large as her head, having swelled out to that extent in the course of two weeks.

Indeed, like many of the *fungi*, these sudden developments seem to thrive on death, to flourish on decayed or decaying vitality. They are true parasites, exhausting the trunk they spring from, killing that they may live—for they really have a sort of independent vitality. They evidently absorb from the soft parts around them, which wither away, the muscles especially becoming wasted and enfeebled. Emollient applications that would soothe ordinary irritation and inflammation, really seem to nourish these tumors, and stimulate them to more rapid development.

In fact, though I have, for the sake of description, compared these growths to fungi and parasitic plants, I regard them myself, a result of perverted nutrition, giving rise, by a sort of "equivocal generation" if you please, to a new center of animal vitality—as a congeries of entozoa feeding on the flesh—as "organized stomachs," absorbing and digesting, like the sponges, the matter they come in contact with. Whether this view could be at all confirmed by the microscope, or by more extended comparison with other lower or exceptional developments of vitality, I know not and have not time to ascertain; but I wish you not to suppose that I make the suggestion in question as a mere idle fancy. It is really of *practical* importance; at least, it accords with, and serves to illustrate and explain, results of practice. The *encouraging* effect of all warm and emollient applications was before noticed. The hypothesis, however, is just as little favorable to the rougher treatment *as commonly* enjoined. It is well known that the lower and simpler orders of organized being are the hardest to destroy *by mechanical means*. Their vitality, such as it is, is equally diffused and self-perpetuating in every part. Cutting them to pieces is only creating so many more. Hence lancing down into the carbuncle, or scarifying its surface, must aggravate the patient's *future* as well as present sufferings. Whenever this sort of "vivisection" has seemed to be ultimately beneficial, it was only on account of the other means adopted in connection with it. But if, on the other hand, in strict conformity with our supposition, we

Make such applications as will *completely disorganize* the morbid growth without injury to the surrounding parts or to the general system, we at once succeed in killing the parasite and saving the patient.

Whenever, then, you are called on to treat a tumor having the true carbunculous character, proceed at once to a full and free application of

Caustic Potash. Let it not only thoroughly saturate the surface, but pass through the sinuses into the cavities within, until you are satisfied that no part of the mass is untouched.

You need not be under any fear of increasing the patient's sufferings; on the contrary, after a little smarting for a few moments succeeding the first touches, he becomes perfectly easy. The caustic is here your only effectual anodyne. I have seen a patient who had not been able to sleep for a week before, so pleasantly relieved, that in twenty minutes after the application was begun, she sunk into a sound sleep; and afterward went through a rapid convalescence without a moment's further suffering.

If, however, the characteristic pain should return, it is evidence that the causic was not properly applied, and must be re-applied.

After the application of caustic potash, emollient poultices should be used, changing them frequently and washing off the eschar every time with a strong solution of the caustic, gradually diminishing its strength as a healthy apearance is assumed.

The parts destroyed will soon become putrid and slough off.

There is generally more or less gangrene before you commence. To correct

The *fetor* that attends, a poultice of charcoal and yeast may be applied. One containing pyroligneous acid is still better. The parts may be washed freely with the acids before the poultice is applied.

As soon as the diseased portions have sloughed off, a simple dressing is all-sufficient. The Black Salve will probably suit. Under it, the parts will readily heal up, provided the patient's strength be supported. To secure this indispensable condition,

The diet should be as nourishing as possible, as soon as the patient's appetite admits of it. A lost appetite should be encouraged and welcomed back, like any other prodigal, but not *forced* or anticipated.

The *general health* will require attention. The early use of tonics is almost always desirable; and stimulants may be proper, as there is often a great liability to prostration.

Among *tonics* I would suggest the Prinos verticillatus (Black Alder), an infusion of the berries or bark, or the Cornus florida (Dog-wood or Box-wood). I consider both these, but the former especially, as superior to the Peruvian bark, though that may be used to advantage. Our common Restorative Bitters (For. No. 7), with the addition of the Dog-wood or Alder, will be a good prescription.

Be cautious of any debilitating medicines. If a *purgative* be needed, let it be the compound powder of Rhubarb (For. No. 13), the [Leptandria virginica, the Apocynum cannabinum or Enonymus, atropurpureus, that is, some of the tonic aperients.

A mild *emetic* may be given if the stomach is much deranged, such as our common acetous mixture (For. No. 4), or the infusion of the Robinia pseudoacacia (Locust).

The Alkaline Bath should be used freely and frequently, alternated daily with a bath of the strong decoction of Cornus florida and oak bark.

OSTEO-SARCOMA, OR BONE CANCER.

In this disease the bone is enlarged, and its structure altered, from a deposit of flesh-like matter mingling with its substance. The changes thus produced seem to be the result of inflammation, often excited by some mechanical injury, or some long-continued local irritation.

The word has been also applied to tumors in any part that seem to be of a blended osseous and fleshy consistency.

The bone enlarges as the disease progresses, and the internal structure is changed from the proper *cancelli* or hard reticulated tissue to a brownish fleshy mass. As this morbid formation increases, the parieties of the bone are extended, and often become very thin, in some places giving way entirely, fungous then filling up the crevice. In other cases (which do not therefore exactly correspond to the definition) the cancelli are only enlarged and their cavities filled with pus. Whenever the swelling opens on the surface, large quantities of pus of a peculiar character are in most cases discharged. "This disease," remarks Mr. Liston, "occurs most frequently in the lower jaw"—a fact attributed mainly to caries of the teeth, though other exposures of that bone, as to sudden changes in temperature in drinking, may help to account for its greater liability. In other respects weak and cachectic constitutions are the most liable.

The SYMPTOMS at the beginning are *acute* pain in the affected part, with slight constitutional disturbance.

The part soon begins to swell, becoming hard and elastic, and the pain is more *dull.* At a still later period, acute *lancinating pain* returns. Severe constitutional symptoms now set in, the tumor becomes fluctuating, and in consequence of loose pieces of bone floating in it, *crepitus* can be felt on handling. Eventually the integuments burst and large fungous growths sprout out with a profuse *bloody discharge.* The patient at this stage is much prostrated, and if not soon relieved by amputation, or the proper medication, can not long survive.

In speaking of the

TREATMENT, Druitt remarks, page 228–9: "It is often impossible to distinguish between these two classes" (malignant and non-malignant cases). "The same measures that will cure the curable affections will check the incurable ones." The measures referred to "are repeated leeching, mild mercurial alteratives, sarsaparilla with small doses of iodine and potassium, and change of air and other general tonics." "If these means fail, the only recourse is amputation or extirpation." "But the extirpation of the truly malignant growths should be very early and very complete, partial extirpation being unmeaning and utterly useless cruelty.

Prof. Gibson observes, that "before an osteo-sarcomatous tumor has attained a large size, it may possibly be removed by local and constitutional remedies, without the aid of an operation. Leeches applied to the part itself or its vicinity will be found useful. Blisters also, often repeated and kept open by Savine Cerate, and pressure applied to the part, will prove still more beneficial. As a constitutional remedy, Sir Astley Cooper has extolled the exhibition of the oxymuriate of mercury (corrosive sublimate), combined with a compound decoction of sarsaparilla." "When these remedies fail," continues Professor Gibson, "the operation will become necessary."

Mr. Liston, after telling what should be done to remove the tumor by medication, if that were possible, concludes thus: "I must say that I am unacquainted with any remedies capable of performing the above indications. The *knife* only is to be depended upon." Again he says, "All operations on malignant tumors, in their advanced stages, are unwarrantable."

Hastings, in his "Practice of Surgery," after quoting (or I should rather say *copying*, for there is no *mark* of acknowledgement), Gibson's language, adds, respecting amputation (probably from some *other* authority, besides himself), "but unfortunately this does not always prove successful, for the disease has re-appeared in the stump after the operation." I might continue these quotations, from Old School authority, to a great extent, but I deem it unnecessary, for there is so much unanimity among them on the treatment of this disease, that it would be sheer tautology (though they do not *all* exactly copy each other's words). I have given from English, Scotch, and American standard modern authors, the substance of all that is recommended for this malignant disease; and you can clearly see that it amounts to this: That if leeches, blisters, mercury, sarsaparilla and low diet will not *cure*—nothing will! The operation, by amputation or extirpation, is indispensable; but even this, according to the same authority, is often of doubtful utility.

This must be admitted on all hands to be a malignant and difficult disease to manage, but bad as it is, the results of the reformed practice present a very different face to the picture.

You may be called to treat cases so far advanced—where the constitutional powers are so much prostrated, or when some vital organs or large vessels are implicated to such an extent—

that the patient will not live long enough to give your remedies a chance to act. In such a case, *you*, as well as all others, must fail. But if called at the stage of the disease, *when the surgeon is generally consulted*, your chance of success will be very fair, and a failure should be a rare occurrence.

In *your* TREATMENT, then, if the disease be in a limb, and far advanced, involving the whole surface of the bone, it *may* be necessary to amputate, but even in many such cases you may save the limb as well as the patient. But if it be in the *early stage*, apply an *issue* with caustic potash over the most prominent portion of the tumor, so as to cause an opening into the center of the diseased mass as soon as possible. If it be in the jaw, extract some of the teeth nearest the point of disease, and through the bottoms of the alveoli, make an orifice to the disease if it has not already extended to the roots of the teeth, as it does very early. Having thus made the diseased part accessible, or if it has opened to the surface spontaneously, wash out the whole cavity freely, two or three times a day, with strong *soapsuds*, following it each time with a strong solution of the sesqui-carbonate of potash. Fill the cavity, as far as possible, after each dressing, with pledgets of lint or cotton, in which the dry powder of this caustic is involved. This will excite a copious sero-purulent discharge, which, under the continuance of these applications, soon gives place to pus of a more healthy character.

All the loose portions of bone, as well as fungous growths, will be discharged from the ulcer, and the tumor rapidly diminish. This drain seems, at the same time, to benefit the general health very greatly, by giving exit to the contaminated fluids of the system.

Fomentations, followed by emollient poultices, should be applied to the part, if practicable, two or three times a day, as long as it is irritable or painful. If the ulcer at any time assumes a fetid character, inject pyroligneous acid until the fetor is dissipated.

The CONSTITUTIONAL TREATMENT is of great importance.

Let the alkaline bath be used over the whole surface daily—cold or warm, as suits the patient's feelings. Keep his bowels regular by mild cathartics, repeated once in four or five days, and the proper diet or aperients in the interval.

Let him use the common Alterative Syrup (See Form 11), made more tonic by the addition of Columbo. The Stillingia sylvatica, would probably exert an excellent influence. Judging from its well ascertained control over scrofula, I should have great faith in its virtue in this case. The Ampelopsis quinquefolia, the Scrofularia marylandica, the Menispermum canadense, the Aralia nudicaulis, are all excellent alteratives, and may be used with advantage.

I might cite numerous cases, illustrating the success of this practice, but I will content myself with one, quite remarkable, which was reported by Prof. Morrow, in the "Western Medical Reformer," December, 1846.

The subject of the report, was a daughter of Samuel Pickering, of Newcastle, Ind. She came to this city in January, 1846. The disease was in the lower jaw. Two teeth were extracted, leaving a free opening into the cavity of the tumor, which was so large as to produce much deformity. Into this cavity a solution of the caustic mentioned was injected two or three times a day, and the cavity filled with tents, armed with the caustic in powder.

A moderate hydragogue cathartic was administered every four or five days, and the Alterative Syrup taken three times daily. Her surface was properly bathed. The cavity was freely washed with soapsuds at each dressing, before making the caustic applications.

In less than four weeks, under this treatment, she was allowed to return to Indiana, with directions to continue the same measures until the disease was eradicated. In a few weeks more she was well. In the following August her father, in reply to our inquiry after her health, thus writes:

"I take much pleasure in replying to your inquiries. I have no doubt my daughter, Jane, is well, and this is the opinion of all that have seen her; and I have had two dentists, as well as several physicians, to examine her case. When I visited the city with her, I applied to Dr. Mussey, and asked him what could be done for the patient—and what would be the result? He stated that it (the diseased bone) would have to be cut out, or it would be likely to kill her in a short time. I further asked him if there was not a better way or some other remedy, and he said not. I then informed him, if nothing else would do, I would have it done in the course of the winter, provided she would consent."

This was one of the cases where "mercury, blisters, low diet, iodine with potassium and sarsaparilla," had failed; and "the only recourse" was "amputation or extirpation," according to "standard authorities."

FUNGUS HÆMATODES.

This peculiar malignant disease is sometimes called SOFT CANCER. It is quite as serious as true or scirrhus cancer, though coming on in a different way, and generally affecting different parts and different classes of patients. It has been called Spongoid Inflammation, and Medullary Sarcoma. The name now generally adopted, means "bleeding" or blood-like fungus."

For a long time there may be only a small tumor *under* the integuments, the skin being unaffected and *smooth.* The "lump" is nearly insensible, and occasions the patient little trouble or anxiety. It is somewhat elastic, and may be freely moved about in the surrounding cellular tissue.

If, however, *inflammation* should be excited in the part, from any external or constitutional cause, the swelling will increase with great rapidity, becoming distinctly lobulated. The surface over it becomes discolored, from purplish or red spots, as well as enlargement of the subcutaneous veins. The skin itself now adheres firmly to the distended mass. In a short period, the inflammation results in

Ulceration, generally showing itself at several points, from which dark colored *fungus* growths soon sprout out irregularly, to a considerable distance beyond the surface. The whole fungous mass is extremely vascular; and the top is much larger than the base.

The adjacent *lymphatic glands* become affected, and are not unfrequently converted into substances similar to the abnormal growths themselves.

The patient's *general health* rapidly declines. His whole appearance is sickly, and it is soon found that his constitutional powers are exhausted. *Death* is not far distant.

On *dissection* the tumor presents many peculiarities. A thin capsule covers the whole mass, which seems to be separated into lobes by membranous continuations of the capsule. These lobular portions resemble, in color and structure, the substance of the brain. (Hence the name or epithet of *encephaloid* or brain-like, which is sometimes given to this, in common with other products of perverted or imperfect nutrition). This "bloody fungus," however, is generally much more vascular than cerebral matter, and has, besides, appearances as of clots, or extravasated blood scattered at various points throughout its mass. In some instances distinct cysts will also be discovered, containing serum of a fetid character.

The *muscles* connected with the tumor are frequently obliterated, or so disorganized as to present none of the proper characters of muscular fiber. The arteries, veins and nerves, also, are hardly to be distinguished as such. Not only are all the lymphatic glands in the vicinity of the tumor more or less infected *with* and assimilated *to* the morbid growth, but the glandular system is sometimes found diseased throughout the whole body. The liver and kidneys, in particular, will be found implicated. Instances are recorded where the brain itself was found *similarly* affected. All this shows that the disease in question is clearly, if any disease is, *constitutional*, involving the whole organism.

The *diagnosis* of this affection requires attention. Great care must be taken, in the first place, not to confound it in its earlier stages with

Aneurism. To mistake the *pulsating* arterial tumor for incipient fungus hæmatodes, and treat it as the latter should then be treated, might easily prove a fatal mistake for your patient and for your practice.

From *cancer* proper, it is distinguished by its rapid *growth* as well as elastic "*feel.*" This last character may be mistaken for

"*Fluctuation,*" and occasion a still worse error. The practitioner may feel strongly tempted to plunge in his lancet, but is inexcusable for such an indiscretion, whenever he has to do with a distinctly circumscribed, elastic and movable lump. These characteristics should awaken his "caution." They are not the symptoms of simple *abscess.*

The *true cancer* is not only of *slow* growth, quite hard and *incompressible*, but has a rough surface over it, the skin being striated, instead of smooth and natural, as in the fungus hæmatodes. The cancerous tumor, or scirrhus, instead of containing soft medullary and bloody matter, is, so long as it continues such, consistent and fibrous throughout, resembling cartilage, with narrow bands proceeding irregularly from the cartilaginous or central nucleus.

Fungus Hæmatodes is most *liable* to affect young persons, and the extremeties rather than the trunk. Cancer is more apt to fall upon the more vital or central parts, and seldom occurs before the meridian of life is passed. Thus

The *eye* is not exempt from fung. hæm., though not so liable to it as to cancer proper., The same remark applies to

The *testicle*, where the two species of malignant degeneration ought never to be mistaken. *Scirrhus* of the testicle is very painful, though hard and horny, and very heavy. It may be more difficult, and sometimes, perhaps, impossible to diagnosticate between incipient fungus hæmatodes and common

Hydrocele. As the part enlarges, however, the lymphatic *glands* of the *groin* soon indicate the difference, and the *constitutional* symptoms of the malignant disease become so much more severe, that no well informed practitioner will be found sticking in his trochar, or sending the patient to a professed surgeon to be tapped for that species of local dropsy.

The *thyroid* gland has been, in a few instances, the seat of this affection.

Any part of the glandular system is liable to it, as before remarked, but other parts are not exempt.

In regard to the

Treatment, *time* is a consideration of vital importance. Unless a proper course is adopted *before* the lymphatic glands become involved, no treatment, I am afraid, can avail anything. Before this, prompt and efficient means may remove the evil and save the patient.

So long as the lymphatic glands, in the neighborhood of the affected part, remain free from the disease—so long as the tumor is still free from inflammation and insensible to pressure—so long as it seems loose *underneath*, even though there should be some slight adhesion to the surface *over* it, with discoloration of the skin—there is a prospect, nay, a probability of successful surgery. The tumor may be removed with impunity, if there is yet no adhesion to the muscles or other parts beneath.

If the tumor is so situated that it can be *wholly removed*, let it be done with the *knife*. Seize the mass firmly with a tenaculum, and raise it up with considerable force, so as to put the skin upon the stretch. Then cut through the integuments round the morbid mass, at such a distance as will include not only every appearance of adhesion but of discoloration or enlarged blood-vessels. As a general rule, the incision should circumscribe as much as three-fourths of an inch beyond all visible sign of affected surface. The integuments and superficial fasciæ being cut through, still pull upon the tumor, so as to put the cellular membrane on the stretch. Pull on, and you will generally be able to get it away, without further cutting. If not, let the knife aid. Recollect, however, that if any affected part, particularly of the skin, be allowed to remain, it will regenerate the disease. The advantage of distending the skin and cellular membrane, is, that it enables you to avoid dividing blood-vessels.

After such a removal, apply a slippery elm poultice, and let it remain on for twelve hours. On then removing the poultice, the wound should be washed with mild caustic solution.

This lotion and poultice should be continued from day to day until the whole heals up.

The *constitutional treatment* to be adopted throughout is pretty much the same as that recommended for cancer. However, more active

Cathartics and diuretics will here be proper. The bowels are to be kept considerably loose, and an active cathartic given every four or five days, till the sore is effectually healed; while, at the same time, a steady drain of serous fluid is kept up through the kidneys.

If, however, the tumor is so located, or so adherent to surrounding parts, as not to be clearly removable by the knife, your only chance is the *caustic potash*. This alternative is also indicated whenever the fungous tumor is become painful.

In your *cauterizing*, you must rely principally on your *first* application; for if you fail to destroy every fiber of the diseased mass, the application of the caustic to the adjacent parts will only stimulate this neglected germ to increased extension. In the course of twelve hours, perhaps, it may have spread beyond all further control.

Have your cautery then extensive enough, and continue it long enough, to effect and *insure* your object. Thrust the burning pencil deep into the center of the mass from various points, and pass it all round the tumor for some distance beyond it. Leave nothing but a disorganized mass. When you are satisfied there is nothing left but what can and will come away, put on the emollient and *absorbent* poultice before directed. If there be hæmorrhage, let your poultice be wet with some astringent solution instead of water. Generally, however, there will be little bleeding when the caustic has been properly applied.

The patient's strength should be sustained in the meantime, by stimulants, tonics and a nourishing diet. In this case the cathartics and diuretics should be used, but with due regard to the patient's ability to bear them. The constitutional alteratives will also be indicated. Let both your depletive and tonic means be of an alterative character.

As soon as *sloughing* commences, let the mild caustic, in substance, be freely applied several times a day for two or three days, and gradually discontinued as the parts assume a healthy appearance. But during the whole course, either the sore should be washed once a day with a strong solution of this article, or the powder should be sprinkled on the surface of the wound or of the poultice. The elm poultice should be large enough, and renewed often enough, to insure the absorption of all the matter thrown out from the sore. Never let it remain on longer than four or five hours at a time. Let it also be as dry as possible, consistently with a proper emollient and adhesive character.

If, however, you are called on to treat a case where it is plain that the *glandular system* is affected—the patient having already begun to sink under the *constitutional* disease—let me advise you not to attempt a cure. Your doing so will tend to hasten the patient's dissolution, and result in your own disgrace.

Several *cases* of this form of malignant disease have been successfully treated by the Eclectic School in this city. I recollect one case brought before us under peculiar circumstances. It was in a boy, brought from the country by his father and attending physician. He was first taken before the Professor of Surgery of the Ohio Medical College, who pronounced the *disease* incurable, and the boy's *life* only to be preserved by very speedy amputation. For the *further* satisfaction of the parent, the attending physician consented to bring the case before the Eclectic Faculty, confident that his previous failure and the regular professor's prognosis would be fully justified. Accordingly the very next day, after being at the hospital, the boy was brought up at the "*clinique*." His knee was swelled out to the size of a quart bowl, with a lobulated shape. The surface was ulcerated, presenting a most ugly appearance. "The doctor" had been *seasoning* it with corrosive sublimate! He was not a little surprised and apparently chagrined to hear, though the same diagnosis was given, a *prognosis* so different from the former one. The case was pronounced by the attending professor *still curable.* It was accordingly treated in this city upon the plan just recommended, and, in a few weeks, the patient was well and walking about. I understand that he has since continued well.

LECTURE XXIII.

SCALD HEAD—LUPUS—MAXILLARY ABSCESS—SALIVARY AND LACRYMAL FISTULAS.

TINEA CAPITAS—Description—Contagiousness—Ulceration and scabbing—Originates and spreads only among children—Cause?—Plenty of soap the first measure of treatment—Soft soap and Poke root—Other measures—The irritating *cap*—Callosities and cauterization—Constitutional means—Bathing and *other* alteratives—Cream of Tartar and Sulphur—*Failures* an encouragement to better treatment.

LUPUS—Malignancy—Various origin—Location—Character and progress when ulcerated—Treatment, simple and effectual when preventive—Cautery and Excision.

MAXILLARY ABSCESS—Cause and consequences—Symptoms—Preventive and early treatment—Mechanical and medicinal—Later measures, local and constitutional.

FISTULA PAROTIDEA—Cause and progress—Remedial measures, mechanical and medicinal.

FISTULA LACRYMALIS—Strict and popular definitions—Medical treatment in mild cases—Probing often operation enough—a radical cure to be attempted in all cases.

TINEA CAPITIS OR SCALD HEAD.

This is a disease of the scalp, peculiar to children and young persons. It varies a good deal in its character. Sometimes it appears as a scabby eruption, covering small portions or the whole of the scalp. In some cases a great amount of matter is discharged from the affected parts, in others but little. This discharge may be either thick and purulent, or, as is more frequently the case, a thin and sanious fluid. This matter is often contagious in character, and so irritating, that when it gets about the ears or neck it occasions ulceration. These secondary sores, however, heal spontaneously, showing that the contagious disease belongs exclusively to the scalp, and will not continue long in any other part of the integument. Its diffusion over the scalp, and propagation from child to child, show, clearly, that *among children* it is as contagious as the itch. Whatever the cause, I never knew an instance of a grown up person catching the disease, though adults often *have* it, having retained it from their childhood.

There is often a great *thickening* of the scalp at particular points. At the apex and lower portions of the occiput, in particular, you will often discover callous spots. There will also, in some cases, be considerable *ulceration.* Large and deep cavities will be formed in different points, with raised edges and all the other characteristics of the "indolent ulcer."

In some cases the suppuration or ulceration will be but slight, but the whole scalp will be covered with dry scabs, which appear at first view, like the thin branny scales of *dandruff;* but when they are combed off, they are seen to be a complete crust, leaving the scalp beneath of a fiery redness, as if recently scalded, and itching and burning from the exposure. It is particularly in this form of the disease that the *hair falls off*, leaving large spots nearly bare, the scalp presenting there an inflamed and shining appearance.

At other times the morbid secretion will be so abundant and the eruption so extensive, as to form scabs over the whole head, covering it like a *shell.* And this happens, too, in spite of all exertions to prevent it by the strictest cleanliness, especially if the hair has not before fallen off to a very considerable extent.

The CAUSE of this disease is not well known, further than that, when developed, it becomes contagious. It may be communicated by using the same comb or towel, or by sleeping with one already affected. It is commonly supposed to be most prevalent among poor and ill fed persons, or such as are living in low, damp and filthy places; but it is not by any means confined to this class. I have seen as many cases in cities among the children of the better provided classes as among their fellow *citizens* in rags. It may occur at any age from birth to puberty, but is seldom or never originates in an individual after puberty. Persons who have had it throughout their childhood, may continue to be affected with it up to the meridian of life, if it do not previously *end in consumption*—as it not unfrequently does, by producing a general cachectic condition of the system, which predisposes to pulmonary affections.

It is believed to be owing, in very young children, to a neglect of properly washing them at birth. It is said, also, to have been produced indirectly from scalds and burns, by the action of the irritating secretions on other parts of the head. In some instances there has appeared reason to attribute it to syphilitic virus in the mother.

TREATMENT.—First and foremost let their be no want of *soap and water*. Cleanliness is a principle of treatment that applies to all cases. In anything like a bad case, let your soapsuds be a *lather*, and not only wash the whole head but *shave* off all the hair. Have the whole scalp bare and smooth, if possible.

Where there is scabbiness with soreness, it will be first necessary to remove the irritation. This can be best done by washing the head twice a day with strong soapsuds—the common *soft soap* used in the country will answer best—and putting on between times, as a cap, a warm slippery elm poultice. This will soon prepare the parts for the razor.

After the shaving *continue* the *soft soapsuds* night and morning, and each time, after drying off the head, wash it with a saturated tincture of Poke root (Phyt. decand.); and, during the night, let the head be also covered with a plaster of the inspissated juice of the berries of the same plant.

This simple article, applied in the manner directed, will be sufficient in all ordinary cases to remove the disease (the soft soap being never forgotten).

Another means which has been frequently successful (with the soap, etc.), is a *lotion* composed of equal parts of recent beef gall and vinegar.

An *ointment* which will often succeed, but has sometimes failed, is made of equal parts of tallow and tar, into which finely pulverized black pepper is mixed in sufficient amount to render the mass of a proper consistency. To every pound of this ointment forty drops of creosote should be added, taking care to mix it properly. This preparation is to be rubbed into the scalp night and morning, after a previous *scouring* with soap and water. If this and the other simple means all fail

Apply an *Irritating Plaster* over the whole scalp, so as to produce vesication. Get and keep up a free discharge of *pus*, from the whole surface, for eight or ten days. Then take off the irritating cap, and apply simple cerate or poultice, letting the head heal up gradually. No fears need be entertained of causing permanent *baldness* by this treatment. The hair will continue to grow in spite of this healthy suppuration, so vigorously indeed as to present considerable inconvenience. When the healthy process is complete, every trace of the disease will almost invariably have disappeared.

In some instances even this last measure will fail of removing the disease from every point, which is necessary to a complete cure—where, for instance, there are hardened callous or horny tubercles about the head, which continue to discharge an irritating matter. These *callosities* will have to be treated with caustic potash. As this application *will* destroy the hair, care must be taken to make as small a cauterization as will be *effectual.*

In some cases the *whole scalp* may appear thickened and hardened. It may then be necessary—at least it has been my practice—to make small caustic issues near the margin of the hair, three or four inches apart and extending all round the head; and to keep up a discharge therefrom for some time after the removal of the irritating plaster.

The CONSTITUTIONAL TREATMENT is almost of equal importance with topical, especially in individuals of a scrofulous diathesis or other constitutional taint. The general surface, as usual, requires special attention. Without a healthy condition of the whole skin, it is in vain to attempt to restore that of the scalp. The Alkaline Bath and frictions, or "hand-bath," must be strictly attended to. [See Introduction.]

I am convinced that the frequent *failures* of physicians to effect a radical cure of this disease, is attributable much more to their neglect of the functions of the skin in general, than to the want of efficient applications to the part of it affected. For myself, I rely, in fact, much more upon the measures now referred to, than any local means; and I can not too strongly enforce this consideration on your minds. Besides restoring this important function, *other*

Alteratives should be used. They should be generally those of a simple character. I have prescribed a strong infusion of the Ampelopsis quinquefolia (Five-leaved Ivy), of the Scrofularia marylandica (Carpenter's square), or of the burdock and yellow dock (Arctium lappa and Rumex crispus).

Any or all of these may be conveniently administered in the form of a syrup.

A tendency to *costiveness* should be strictly guarded against. Small portions of the Hepatic Powders (For. No. 12) will best fulfill this indication. Sulphur and Cream of Tartar are sometimes beneficial; but these should not be used, especially the *sulphur*, where the patient is, in any degree, inclined to *disease of the lungs.* I have myself had frequent occasions to notice the bad effect of this *popular* article in tuberculosis. In these and other scrofulous cases, I have derived great benefit from an irritating plaster at some distant part, as on the arm, just at the insertion of the deltoid muscle.

Before concluding I will observe that this disease, trifling as it may appear to some, because of no immediate danger to life, though disgustingly troublesome—is really one of great importance to the practitioner. The very fact that it is so rarely cured in ordinary practice, should stimulate your exertions. Persons may be found all over the country, who have been suffering from it more or less, from childhood up, notwithstanding they have used, as they will tell you, every means; and have expended hundreds of dollars on doctors, or in doctoring. The failure of the profession in these obvious cases of external disease, is one great cause of the growing want of confidence in medical science. The fact is, that science has *not* been brought to bear upon hundreds of the troublesome "ills which flesh is heir to." The minor maladies of man deserve your study no less than the most serious. And as for the risk of failure, (which too often prevents the study of the case as not worth while, instead of stimulating to new exertions, as it would do, even when well grounded), I can very safely assure you in this, that *you* need not fail—that with the means I have pointed out you may succeed in every instance, where you perseveringly and judiciously apply them. I am thus confident, not merely from my own experience, but that of many others in various parts of the country. Scald Head is among the many "incurable cases," which the Eclectic practitioner should be anxious to get hold of. It will be a standing advertisement of yourself and your system.

LUPUS, OR NOLI-ME-TANGERE EPITHELIAL CANCER.

This is a strictly local, but peculiarly malignant disease. Hence both the bad names under which it goes. The former, meaning "wolf," is intended, no doubt, to express its ravages, and the latter *noli-me-tangere* ("Don't touch me"), is significant of the part where it usually occurs—about the nose and mouth, as well as of the mischief of irritating it.

The FIRST APPEARANCE of this serious disease is very various, though essentially the same kind of *sore* is the result.

It most usually commences as a *small tumor*, of so little apparent importance, that it does not generally attract the patient's attention until some abrasion of the surface occurs. This may be months after the tumor commenced, and it then looks like a large red bullet.

There may, however, be only a *slight inflammation* of the surface, with little, if any, tumor or tumefaction. This results in a dry, "scaly scab" of a darkish color, which is rather easily detached, leaving a red and inflamed surface beneath. After this *scab* has been several times removed and renewed, a *sore* takes its place.

Sometimes the part assumes quite a prominent appearance, forming a *vesicle*, or watery blister. On this vesicle being accidentally broken, a crust is formed over the surface, and the water re-accumulates under it.

At other times it begins as a large and prominent *wart*, which, from its exposed position, is easily bruised, and then becomes very sore and inflamed. If it be entirely removed from the surface, a new one will soon sprout up and attain the original size, if not probably grow a little larger.

Beside the small tumor or the scaly scab, and the watery, or warty excrescence, another form of incipient lupus, is the *tubercle*, a tumor of an oblong shape, somewhat resembling a split bean. This form however, is not constant, there being often projections out into the adjacent parts. The surface is sometimes smooth and shining, in others, rough and indented. Occasionally it is white, in others, livid or purple, when it is not inaptly called a "blood wart." If the surface of this tubercle become abraded, a scab forms, and ultimately a sore precisely as in the case of the pimples first mentioned.

The first form, or its resulting scab, is most frequently noticed near the inner canthus of the eye, or the side of the nose—the wart is more common upon the cheek—the tuberculous form occurs upon the body, most generally upon the back and shoulders. Occasionally several of these last named tumors are found clustered together, but as a general rule they are distinct and solitary.

The *lupus* SORE, however, commencing, is known by its purple margin and depressed center, which is either covered with a white, tenacious pus, or exudes an ichorous matter. The surface when exposed has rather a fiery appearance. The *pain* is severe, sometimes described as "pricking."

After ceasing to be protected by a scab or crust, the *sore* generally *increases* in size and depth, very rapidly. Sometimes, however, its progress is slow and superficial only; it gradually spreads, but does not deepen its excavation. The lymphatic glands rarely become affected, nor does it early do any sensible injury to the general health. In fact the ravages of this insidious disease might go on for years, and give no further trouble than by the smarting and soreness.

When occuring near the eye, it eventually, if not arrested, penetrates the orbit, and first completely severs the muscles of the globe from their attachments; after that, often extending up into the brain, when, of course, its farther progress is soon cut short by death.

The TREATMENT of lupus, if commenced at a very early stage, is quite simple and effectual. I have removed, or, if you please, *prevented* numerous cases, by directing the application of a little *saleratus* water. A few days' perseverance, with this lotion, will often be successful, in the simpler forms of the disease; a few weeks will generally answer the purpose. By this means alone, I have in five of six weeks, at farthest, removed the warty kind, when of many years standing. If this or other simple means should fail,

The *caustic potash* should be resorted to, and the incipient lupus treated as a cancerous tumor of any other kind. Even after it has become an open sore, you need have no difficulty in curing it, if so situated that you can get at it.

Although in this form of malignant disease, *constitutional symptoms* are not very marked, yet I never feel safe, in a severe case of it, without administering some suitable general remedies.

In the tuberculous kind, the *knife* is frequently an effectual means, as they are generally situated where excision can be performed without risk or inconvenience. But in the cases about the eye and nose, cutting out, not only often fails to cure, but very frequently increases the evil, adding both to the extent and malignancy of the disease.

Maxillary Abscess, or Ulceration of the Antrum.

The antrum highmorianum is subject to a disease which is always very distressing, and when of long standing, difficult to cure. It rarely occurs in young or very old persons, being generally confined to those of the middle age. It may exist for months and years without the sufferer being aware of its nature. For a long time it may pass for mere "tooth-ache;" indeed its most common

Cause is the irritation of the lining membrane of the cavity by *decayed teeth.* The ulcers on the roots of the teeth not unfrequently penetrate into the antrum, thus communicating their irritation or disease to the mucous membrane, and that to the periosteum, and bone. *Irritation* also from any other cause, as from a *common cold*, originally affecting the schneiderian membrane, may proceed to inflammation and thence to ulceration; the discharge from which, finding no sufficient outlet into the nose, becomes an additional cause of irritation, until the bone also ulcerates, when *fetor* becomes almost as great an annoyance to the patient as the pain. It is offensive to everybody about him, particularly at night.

The chief symptoms in the early stage, is a severe *pain in the face*, just beneath the prominence of the malar bone, which continues in spite of all applications for its relief. The neighboring *teeth* not unfrequently become *secondarily affected*, and are extracted without any relief. In other cases, though the teeth may have been the original cause, their roots not entering the antrum itself, or not making a sufficient orifice in it for the matter to flow out, nothing is gained by extracting them, and the patient and surgeon may be still in the dark as to the nature of the affection. If, however, any considerable quantity of matter flow out. there will, of course, be no more doubt. A considerable discharge of offensive *matter* through the *nose*, from the sinus overflowing, is in connection with the seat of the pain, another diagnostic symptom. In some instances the face gradually swells, and becomes very much disfigured. The walls of the antrum may be visibly distended by the accumulating pus. They have been in this way destroyed, opening into the cheek or into the orbit. In connection with the diseased antrum, the inflammation may extend to the frontal sinuses and purulent collections be formed there also. One such case I have seen. In all cases of long standing, the chief complaint of the patient is the fetid effluvium or discharge through the nostrils.

If called to a case of this kind early enough, your OBJECT will be, if possible, to *allay* the *inflammation.* This may often be effected, and *suppuration* with all its inconvenient consequences *prevented*, by a timely use of local and constitutional means. One of these means is, of course, to

Extract any decayed tooth or *teeth* as soon as possible.

If all the teeth connected with the part are perfectly sound, you will be the more certain as to the source of the evil. No ordinary local treatment will then avail. There are in the early stages of almost all cases

A determination to the *head*, a full, hard and frequent *pulse*, a general *feverish* condition, with costive bowels, and dry skin. All these symptoms should be met. First, then administer

A tolerably active *cathartic*, and such *diaphoretics* as will keep up a free perspiration for a considerable length of time. *Emetics* may be used with advantage, especially in the earlier stages of the disease. If our common emetic is used, give one teaspoonful every fifteen or twenty minutes, in some warm teas—such as an infusion of the Sudorific Powders. Continue the nauseating for half a day; finally, vomit freely. If this measure is resorted to in time, before suppuration has proceeded far, it will almost invariably bring about resolution. When that can not be hoped for, let no time be lost before you proceed to

Extract the *second* molar tooth. (Some say the *third*—it may be necessary to take out both—I have usually extracted the second only). Should the alveolus communicate with the antrum by a sufficiently large opening, you may *not* also have to

Drill a hole about the size of an ordinary goose-quill. At least that space is requisite for the fluids thrown in, as well as for the pus to find a ready outlet. The operation causes little or no pain, if the bone be not inflamed at the point. It may be performed with any common drill of the right size, or a shoemaker's pegging-awl, used as a drill. Then

Inject into the cavity some anodyne preparation, slightly stimulating, such as a combination of the tincture of opium (three-fourths) with that of capsicum (one-fourth). This will, in slight cases, allay the pain, and cause a rapid subsidence of the inflammation. If not, change this first injection for

A strong *solution* of the mild *Caustic*, to be thrown in freely once or twice a day. If it cause too much pain, weaken it for a while, increasing the strength again as the patient can bear it. It may be well to alternate the caustic solution with a strong decoction

Of the geranium, marsh rosemary (Statice limonum), or of oak bark, to which is added an equal portion of the compound tincture of myrrh.

Two or three weeks' use of the foregoing means will generally be sufficient to effect a cure. I have succeeded in relieving every case of recent occurrence in less than ten days' treatment—several in half that time. But if you are called to

A *case* of several *years' standing*, other means may be necessary. If it has not been done already, *take out the teeth* (second and third, and perhaps, also, the first molars). In some cases, the maxillary cavity is divided into cells, when a communication through one alveolar socket will not be sufficient. A *larger orifice* than that before directed may now be required.

To *correct* the *fetor*, inject pyroligneous acid once or twice a day—at first diluted. After one or two applications, it may be used pure, without much, if any suffering on the part of the patient. A day or two's use of this agent will, for the present, entirely counteract the offensiveness of the discharge. Then

Resort to the sesqui-carbonate of potash, as strong as it can be borne, washing out the sinus with it at least twice a day; also, inserting pledgets of lint, in which the dry caustic is inclosed, high up into the antrum. You may even crowd them in so as to fill up the cavity. For their extraction by the probe, a large orifice is necessary. They should not be allowed to remain in more than eight or ten hours, before being changed, and having the cavity washed out with the caustic solution, or with soapsuds. This process will soon effect such a change in the part, that the suppuration will become healthy, and then cease. Even when a considerable destruction of bone has taken place, a perseverance in this treatment will almost invariably bring about a cure, provided, always, the proper constitutional remedies are used in connection with it.

Inasmuch as nearly all bad cases occur in individuals affected with some *constitutional taint* — the scrofulous, for instance, or the venereal, seldom to be distinguished from the *mercurial* — our Alterative or Scrofulous Syrup (Forms Nos. 11 and 14) should be freely given. If the patient is much *debilitated*, tonics and a nourishing diet should be prescribed. Our native wine (the Catawba) may be used with advantage in moderate quantities.

The *general surface* should of course be strictly attended to.

An alternation of acid and alkaline baths is likely to suit the case. [See Introduction.]

I should have mentioned, that where loose *pieces* of *bone* are detected, they are to be extracted, if it can be done without too much force or irritation. Where it can not, the caustic will effect their destruction and discharge. In one extraordinary case of long standing, where the bone was much involved, the patient derived great advantage from the Alterative Syrup, strongly charged with the Corydalis formosa (Turkey-corn). I have used the same article in other cases, and am satisfied that it is a very valuable alterative. At other times, I have relied almost exclusively, as to my alterative treatment, on the Stillingia sylvatica (Queen's delight). When we have to prescribe for a long time, it becomes necessary to

Change the remedies, as the Alterative for the Scrofulous Syrup, the Corydalis for the Ampelopsis (woodbine), Yellow Dock (Rumex crispus) and Bitter sweet (Celastrus scandens), are a good resource. Some of our practitioners recommend the addition of the Iodide of Potassium, in the proportion of ʒj to the quart. This is an article, however, which I have never, of late years, found it necessary to use, and to the use of which I have objections.

PAROTID OR SALIVARY FISTULA.

Wounds of the face, which sever the Parotid or Stenonian Duct, often cause much difficulty. As the healing process goes on, the duct is closed, and the secretion of the parotid gland is prevented from escaping into the mouth.

It accumulates and forms a *tumor* at or near the original wound, which inflames and sooner or later ulcerates, opening upon the outside of the face.

This *fistulous opening*, out of which pus as well as the saliva secreted by the gland is constantly passing, continues to be sore and painful, and is a source of great annoyance to the patient, both on account of the discharge and the disfigurement of his face.

The proper TREATMENT consists in allaying the irritation and inflammation, and opening a passage for the saliva into the mouth, so that the fistula may be allowed to heal. For the former purpose, foment the part two or three times a day, and apply the Elm poultice in the interval, wet with warm milk and water.

If there be much hardness or callus, apply the mild caustic in solution, or powder, or both, as required, until all induration has disappeared.

When the parts become healthy, make an *opening* with a small trochar, or a diamond-pointed steel probe, from the inside of the Buccinator muscle, at or near the original point of opening for the duct. In making the orifice, pass the trochar into the open end of the duct at the fistulous opening: or it is better to let it enter the parotid duct a line or two back of the opening, if practicable. Insert a silver or gold *tube* from the mouth into the duct, so as to guide the saliva into the mouth. The tube should be long enough to pass for an inch into the duct, so that it will not be liable to come out into the mouth.

The *Fistula* may then be readily healed, generally requiring only simple dressings. But if it does not heal kindly, apply the mild caustic until the callus is removed, and then the edges may be brought together with adhesive straps and united. The edges may be scarified and brought together. The Canula should be left in the duct until all parts are sound and healthy, and then removed.

The continual flow of saliva will then prevent any danger of a closure of the duct.

FISTULA LACRYMALIS.

Any obstruction in the ductus ad nasum causing regurgitation or the lubricating fluid upon the eye, or rather its constant accumulation, and consequent *overflow* in the shape of *tears*, is called by this name, although it only strictly applies to the case where there is not only a distension of the lacrymal sac, appearing as a tumor at the inner corner of the eye, but where that swelling has occasioned inflammation and *ulceration*, with an opening for the tears *on the face*, instead of into the nose.

In ordinary cases, the stoppage in the duct occasions but slight inconvenience from suffusion of the eye-ball and obscuration of vision.

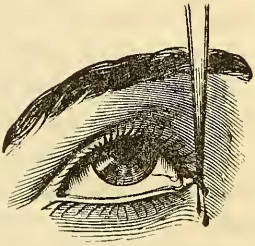
The inflammation, however, occasionally becomes serious and very painful.

Several modes of TREATMENT are recommended by the books.

That most commonly adopted is an operation and the insertion of a style. But, in the majority of cases, an operation is unnecessary—mere medicinal measures will be quite sufficient.

Your *first measure*, if there be inflammation present, is to subdue it by emollients. The bitter herb fomentation may be quite suitable. This simple treatment will sometimes be sufficient, the obstruction being absorbed or otherwise corrected, as the inflammatory state is dissipated. If not,

FIG. 13.



Other *mild means* should be tried. I have succeeded by merely washing the surface two or three times over with the tincture of capsicum, sometimes applying it also to the orifice of the duct on the internal surface of the nose. In other cases, I have used

The powdered sesqui-carbonate of potash, introduced within the nose and to the mouth of the duct, by means of a camel's hair brush, as recommended to be done for polypus; the stimulating tincture continuing to be applied as a lotion on the outside. This mode of applying the caustic effects a cure, when, as frequently happens,

The obstruction consists merely in a morbid *thickening* of the schneiderian membrane, or, it may be, in an incipient *polypus*. When Ophthalmia Tarsi is the cause, the puncta lacrymalia will generally resume their office on its removal. Not even probing will then be necessary.

If it is really a *true fistula* you have to do with, there is always a diseased condition of the sac, which secretes a discharge distinct from the tears conveyed through it. In such case

Inject the lacrymal sac with the mild caustic solution, and distend it by small *tents* armed with the powder, while the same lotion is applied to the extremity of the duct in the nose. If the caustic applications are insufficient,

The operation must be performed. This is often a very simple affair.

In many cases, the vegetable caustic alone will, as already stated, by removing morbid deposits or adhesions, clear out the natural channel; and even where we are obliged to cut in and force an opening, it by no means follows that we must introduce a style or canula.

All the "operation" necessary may be to get *into* the *sac* itself, or out of the sac *into* the *nose.* In the former case introduce a probe into each punctum lacrymale, and along the duct into the sac; after which you can make injections, if necessary, with a very small syringe. In the latter case introduce a probe, curved of the proper form, and press it through the bottom of the sac into the nose. Then insert a tent of cat-gut or some other suitable substance; which, with the caustic applied as before directed, will be amply sufficient. The tent is to be daily removed, and the parts freely syringed out till all irritation and soreness have subsided, when the tent may be withdrawn and the external orifice allowed to heal.

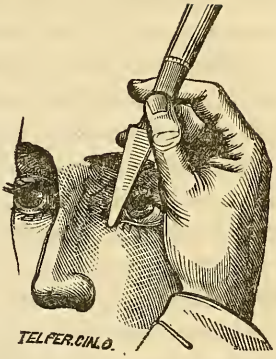
The opening of the duct *into the nose* may be closed, whether there be true fistula or not.

Although you may *perhaps* succeed in relieving the patient of his difficulty, by the insertion of an artificial conduit for the drainage of the eye — and this measure is more convenient in the first place for both surgeon and patient — yet such *cobbling* as that is a perpetual discredit to the *healing* art, as well as disfigurement to the human countenance.

The head of the style is a most unnatural ornament to the eye; and of the two, I prefer a simple tube, over which the integuments are closed and allowed to heal, though it is liable to be filled up, and may even require a *second operation* to clear or remove it. Any article used for the purpose had better be of the *purest gold.* Its risk of *irritation* is quite sufficient, without adding that of *corrosion.*

On the whole, however, I am distinctly of opinion, that in all cases, except where extensive disorganization and destruction of the neighboring parts have already taken place,

Fig. 14.



A *radical cure* should be attempted. Even where you have to force an opening, the judicious use of the caustic and tents will enable you to keep it clear, and, by establishing a healthy action and adaptation of the parts, to make it *permanent* and "*natural.*"

The substitution of a metallic ductus ad nasum, for the natural channel, is no more a *cure* of fistula lacrymalis, than amputation and an artificial leg constitute a cure for white swelling.

[For the operation of Inserting the Style or Tube (Fig. 14), see the Second Part.]

LECTURE XXIV.

OPTHALMIA—SPECIFIC VARIETIES.

Oculists and Surgeons—"Opthalmia, its species and principles of division—Common Opthalmia, or simple conjunctivitis—Catarrhal, Purulent, Gonorrheal and Scrofulous Opthalmia, described and compared—Treatment of each in order—Simple collyria for *O. Simplex*, more important and effectual for general measures—Difference in the Chronic Stage or Form—Relapses, Weak Eyes, etc.—*O. Purularta*, different measures in infants and adults—Strong stimulants in this and in *O. Scrofularia*—Peculiar and effectual measures in *O. Gonorrhealis*, a curable disease—Importance in all forms of constitutional remedies and some of local—Case in point.

The eye may be considered as, next to the brain itself, the most elevated part of the whole animal organism. It is the agency by which the individual holds most direct communication with the universe. Its structure is the most delicate and diversified of any organ in the body. This complicity of mechanism and variety of constituent tissues, together with its almost constant use or abuse, expose it to a proportionate number of accidents or diseases.

To treat in detail of every morbid derangement of the organs of vision, would require a separate course, and merely to give a catalogue of them would be useless parade.

Every surgeon, however — that is, every "general practitioner" of medicine, as he is called in England — ought to be competent not only to *treat* all acute diseases of this important organ, together with its simpler and more common forms of chronic derangement, but to *distinguish* these, with readiness and accuracy, from the rarer and more complex malformations or disorganizations, which may justify him in referring the case to professed eye doctors. Although then you may not propose to become professional oculists or exclusively "operative" surgeons, you are still bound to study and discriminate many of the diseases fully treated of only in works devoted to this one organ.

OPTHALMIA is the generic term for all inflammatory disease of the eye. This word, like pneumonia, was in general use before the modern devise was adopted, of indicating inflammation of a part by its technical name with the artificial termination *-itis.* It seems quite unnecessary to change such *general* and generally understood designations, although *specific* distinctions are well marked in a single word, by such terms as conjunctivitis, schlerotitis, corneitis, iritis and even retinitis.

Inflammation of the eye, however, has other diversities, and requires other classifications, depending on a more important principle than even the anatomical distinction of the part or tissue affected.

As far as nosology or nomenclature is of any importance, these distinct *principles* of classification should be borne in mind. They are independent of and often cross each other. Thus every case of "ophthalmia" *must*, in respect of location, imply one or more of the species just mentioned; but, having regard to its cause or character, it *may* be either acute or chronic, either simple inflammation or scrofulous, or rheumatic, etc., either idiophatic or symptomatic, epidemic or endemic.

SIMPLE CONJUNCTIVITIS or inflammation of the mucous membrane covering the front of the eyeball and lining the eyelids, is, as might be expected from the exposure of the part, by far the most frequent form of "opthalmia," and that which is generally understood by the word, when no other special form or variety is mentioned. Several varieties of conjunctivitis are, however, of sufficient importance to require distinction.

COMMON OPHTHALMIA,

Or *simple inflammation* of the *membrana conjunctiva*, may be brought on by the introduction of foreign substances between the lids and ball, or *other* modes of external injury, too strong an impression of light, exposure to cold, etc. In short, the surface of the eye is *peculiarlg* liable to all the causes and *predisposing causes* of ordinary inflammation.

The first symptom of the irritation tending to inflammation is an uneasy sensation in the part, a sensation of *itching* or scratching—whether there be any foreign substance actually causing it or not; and not unfrequently the patient will call on some one to look into his eye, and remove the supposed offending cause. The next stage is probably more or less *intolerance of light.*

The eye-*ball* soon seems to be swollen, with a diffused redness of the whole visible surface, and a sensation of increased heat. There is also an increased secretion of tears, which not unfrequently become hot and scalding to the cheeks, on which they fall from being produced too fast to be all admitted into the puncta lacrymalia.

As the disease continues to *advance*, the *pain* appears to become more *deeply seated*, sometimes it extends to the forehead. Symptoms of general *fever* may always be detected and are often violent and obvious enough. Costiveness and more or less derangement of the stomach are rarely absent.

In some cases the conjunctiva becomes thickened, presenting a kind of fungus appearance; or there is more or less extravasated fluid of some kind between it and the sclerotic coat, and in rare instances even in front of the cornea. The disease may even spread in the suppurative stage to the extent of separating the cornea from its attachments. This, however, is very rare.

In healthy individuals the inflammation usually *terminates* in *resolution.* It may, however, assume a chronic and obstinate character; but it by no means necessarily follows that it is then so "very difficult to manage," as some distinguished authorities would have us believe.

Although exposure to cold was mentioned as one of the ordinary causes of this form of the disease, some peculiarities are presented when it appears epidemic as

Catarrhal Ophthalmia.

This would appear from the books to be much more frequent in Europe than among ourselves. It is there a very common accompaniment of influenza.

One of the symptoms in which this differs from the common form, is at the beginning a *dryness* of the *eye* instead of an unusual secretion of tears. In a short time, however, the pain diminishes, while a copious *flow* of *tears* sets in, which soon changes to a mucous discharge, and then becomes acrid and excoriating. The patient is constantly feverish.

In some cases the whole visible surface of the eye is covered with *pustules* containing a yellowish secretion. This pustular suppuration is one of the circumstances that distinguishes it from

Purulent Ophthalmia.

This is considered a very serious disease. One eye is often destroyed by it, occasionally both.

It may attack individuals of all ages.

I have seen it, however, much more frequently in children than in adults. It usually makes its appearance a few days after birth. The cause of this singular fact has been much disputed. Some have attributed it exclusively to gonorrhea, or at least leucorrhea in the mother! I have had cases, however, where the former was certainly not the cause, and when I had every reason to believe that the latter *could* not have been. I am much more inclined to attribute it to the fault of the *nurse* than of the mother. It is more reasonable to regard it as produced by the peculiar but healthy secretions with which the child is always covered at birth; and from which it is not always properly cleansed in the first instance.

The eyes are at first slightly *reddened* and *swollen*. This is soon followed by discharges of *thin matter* rather adhesive in its character—the lids being frequently glued together by it. When it is very copious, it becomes of a yellowish and sometimes greenish color and very acrid.

The disease extends not only over the whole front of the eyeball, but throughout the conjunctiva membrane lining the lids, which then becomes much thickened and assumes a fungoid appearance. The distended fold of the membrane may project downward and cover the cornea. The cornea itself, more frequently than in simple ophthalmia, becomes involved and sloughs off, destroying the eye.

There is always great *constitutional irritation* attending the *early* stage of the disease, but it generally subsides in a few days, after which the affection becomes *chronic* and continues purely *local.*

Gonorrheal Ophthalmia

Is generally regarded as produced by a want of attention to cleanliness in patients having the urethral form of the affection, and allowing some of the matter to get into the eye. This matter is said to have the same reproductive action on any other mucous surface as in the original location. But we are told from high authority, that "there is reason to believe, also, that the disease is sometimes produced (in the eye) by sympathy or in the way of metastasis, in consequence *of suppressed gonorrhea;*"* that is, be it observed, in consequence of the *cure* of the disease according to the routine course of treatment! "Oh, *medicine!* how many crimes are committed," how many maladies engendered "in thy name?"

The symptoms are much the same in character as those of the last mentioned form, called especially *purulent* ophthalmia," but the disease is much more *violent* as well as "virulent." Hence an additional reason for believing that purulent ophthalmia, as it affects new born children, can not be of gonorrheal origin. When this specific inflammation attacks the eyes of adults—whose symptoms from their being at the time affected with it elsewhere, may also be supposed in some measure hardened or accustomed to the virus—it often destroys one eye if not both. How then should the susceptible surface of children's eyes, which can not yet bear the light itself, get off without still worse results that those of "ophthalmia purulenta?"

Of this gonorrhea of the eye, we are told by the author just quoted, that "it unfortunately admits of no relief." A probable reason for that opinion on *his* part, and of a more hopeful one on *ours*, will be given when I come to speak of treatment.

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* Gibson's Institutes of Surgery, vol. ii, page 310.

Scrofulous Ophthalmia

May be generally distinguished by the constitutional affection and *appearance* of the patient, as well as by the fact of the eye-disease being peculiarly obstinate under ordinary modes of treatment.

The most peculiar of the local symptoms are irritability and intolerance of light, with little or no pain, however, when the eye is protected from this and other sources of irritation. Occasionally there are some *pustules* or ulcerated spots upon it, which may continue for a long time without any material change.

I shall take up the

Treatment of the different forms of the disease in the order in which I have mentioned the symptoms. First then, for

Simple Conjunctivitis.

Very little *local* treatment of any sort is required in the *early stage*, if the proper constitutional measures are adopted. Cold water during the day, with a slippery elm poultice at night, will probably be all-sufficient.

One of the best soothing applications I have ever seen used is a poultice of the leaves of Scrofularia marylandica. The green leaves merely wet and mashed in warm water and then placed directly on the eye, are best; if the powder of the dry leaves has to be used, a very little of the powdered slippery elm should be added to make it more adhesive. Not unfrequently this simple dressing, applied for a single night has (in connection with appropriate general regimen) entirely removed all redness and every other trace of inflammation—and this, too, in cases which had resisted many other means.

If, however, the case seems inclined to become *obstinate*, an infusion of Hydrastis canadensis, with the addition of borax (ʒij to the pint) may be made use of with good effect. For a later stage of the affection, this lotion will be improved by a drachm or two of saleratus.

Other *cooling washes* may perhaps be equally efficacious, or more soothing in the peculiar state of the parts; but

All local treatment is of trifling importance. Eye washes are merely *palliatives*, and can do but little toward *removing* the disease, in any case where medication is really necessary. Let your reliance be on

General Measures. Have the patient's *feet* immersed in warm water, and in that situation let his whole body be subjected to the alkaline wash (see Introduction, page 14), not forgetting the brisk friction. In slighter cases this may be sufficient. Generally, however, it is to be *followed up* with a yet more efficacious means—

The Alcoholic Vapor (see page 11). When commencing this operation, the patient should at first be encouraged to drink some diaphoretic tea. As soon as he begins to perspire, however, let him take cold water freely, and have the same applied to the eyes. Keep up the process as long as it can be borne without a tendency to fainting. Then put him to bed, observing to wrap him well up in the same blanket that was used to confine the vapor, lest any cool air come in contact with the body; continue the perspiration by mild diaphoretics for six or eight hours longer, and at last gradually cool off. During this time, however, add to your sudorific infusions small portions of

The Acetous Emetic (For. No. 4), occasionally increasing the quantity so as to vomit thoroughly three or four times.

This "course" should be followed up by a

Mild but brisk *cathartic*, such as the com. powder of senna, or cream of tartar and jalap. Should there be much special derangement of the *liver*, add to your "physic" a little podophyllin, or leptandrin, or some of the extract of the Euonymus atropurpureus, or of the Hepatic Powders (For. No. 12).

The alkaline bath in connection with warm pediluvia, should be repeated as often as twice a day, until the desired object is effected—the eye relieved and its *safety secured.*

In almost all cases of severe and alarming ophthalmia, (in that stage of it, particularly when the physician is most likely to be called in, and *blood-letting* is almost invariably resorted to) this course of treatment will, in two or three days, effect a *permanent cure.* Often the relief afforded in the first twelve hours will be quite effectual as well as satisfactory.

If with all the means directed, the violence of the inflammatory symptoms should not be greatly lessened, the "alcoholic sweat" must be repeated as often as every twelve hours. Some cases will bear and need it still more frequently. The emetic and cathartic are also to be repeated, if the symptoms do not sufficiently yield—the cooling lotions being continued during the day and a slippery elm poultice kept on at night.

But though this treatment will almost always relieve all pain and other acute symptoms, it occasionally happens that the disease will continue, though under a modified, and what might already be called a chronic form.

The CHRONIC STAGE, indeed, in cases that are allowed to run into it, commences much *earlier* than medical men in general seem to think. After the disease has continued five or six days, it may, as a general rule, be regarded as chronic, although pain and other acute symptoms may still be present, if no means have been taken to relieve them.

Should you be called to a case at this juncture or *transition stage*, you will generally do well to begin with the treatment before described, unless some equivalent means have been before made use of. After this, should the disease persist as you first saw it, or be only modified, you must consider and treat it as

CHRONIC OPTHALMIA.

The change from the acute to the chronic form of the disease will seldom happen, under proper treatment of the former, unless in scrofulous cases.

One of the most marked changes of treatment now indicated, is, that your *local applications* must be of a *stimulating*, instead of a refrigerant character.

The alkaline bath should be continued as before, and the bowels regulated, but active depletive measures must be abandoned.

The Alterative or Scrofulous Syrup (Forms No. 11 and 14) should be given, as the condition of the patient may indicate.

To the *eye* itself, the tincture of capsicum will be a good application. It may be well at first to weaken it with twice or three times as much water, gradually strengthening it at each application, until at the end of a week (if the symptoms requiring it continue so long) you may use it pure.

If the case prove *obstinate*, apply an Irritating Plaster to the nape of the neck, extending round and up behind the ears, leaving it on at first till it produces suppuration, and replacing it occasionally until the symptoms yield. It is necessary for some patients that the original plaster should be frequently fresh spread. It is sometimes desirable to set up this revulsive drain as soon as possible. It may be well to premise the cantharides *blister*, proper precautions being taken to prevent absorption. Moistening the surface with sweet oil, is perhaps the best means for this purpose. As soon as the cuticle is removed, put on your Irritating Plaster, and you will get a copious purulent flow in twenty-four hours.

Occasionally, after you have by these local and general means removed all actual inflammation,

A *weakness* of the *eye*, with perhaps an intolerance of light, will remain. In such a case, combine with your stimulants some *astringents*, such as the tincture of galls, the extract of oak bark, or a strong decoction of Marsh rosemary (Statice limonum or carolinensis).

In applying your *stimulating* collyria, you must not be deterred by its producing at first a severe smarting and burning. This occurs, even in cases to which it is most suited; but soon gives place to quite a cooling and grateful sensation. After experiencing this once or twice, the patient will be very far from objecting to the momentary pain.

If, however, you should discover that permanent *irritation* results from the application—that the eye gets worse instead of better—discontinue, and resume cooling and soothing measures. Even in the chronic stage, the part may, for a time, be very irritable.

If the patient has much *constitutional taint* or *derangement*, I am in the habit of applying an Irritating Plaster on each arm, between the insertion of the deltoid muscle and the elbow. A discharge from these parts is not only a powerful *adjuvant* during the other active treatment, but an excellent *protection* against relapse, after the plaster has been withdrawn from the back of the neck.

As *relapse* is particularly liable to occur in such cases, it is well also to continue the *astringents* to the eye after the stimulants have ceased to be used. I have found that the application of a strong infusion of cinchona, or of the Cornus florida, has an excellent effect as a sort of *local tonic*. The pyroligneous acid will sometimes answer a similar purpose, and may often be used with good effect during the active stage of the disease.

For Catarrhal Opthalmia,

The same *general treatment* may be directed as in the former case; but the *local applications* should be *more stimulating*—the peculiarity of this variety being, that the chronic form is assumed almost from the beginning. The pyroligneous acid, just referred to, is here peculiarly applicable.

For Purulent Opthalmia,

The treatment must be *constitutional* as well as local, when the disease occurs in *adults*, such means being generally required as are mentioned under simple conjunctivitis.

In the case of infants, a few days old, *local* measures are mainly to be relied on. If constitutional remedies are required, they must be taken by the mother or wet nurse.

I have found these cases to yield, in a few days, to repeated applications of the tincture of myrrh—say as frequent as every six or eight hours. This may be advantageously preceded however, in the earliest stage, by soothing and cooling applications, though these measures seem to have no tendency to remove this form of the disease, but only to lessen the pain. Your reliance must be on stimulants.

In the first case where I saw the concentrated myrrh tincture applied, the little patient was sensibly relieved at once; a considerable improvement was manifest in twelve hours; and in less than three days the disease had disappeared. I well recollect another case, which had been allowed to run on four or five days before I saw it; and a shocking sight it then was! —instead of eyes, there appeared protruding out beyond the bridge of the nose, two huge fiery globes—mere red fungus-looking masses, nearly as large as hen's eggs. The thickening and change in the mucous coat were such that nothing like cornea was to be distinguished. It was now all one suppurating surface; and the amount of matter discharged was surprising; as much as a teaspoonful could be removed at a time, which had to be done, I was told, every three or four hours. After attempting to allay the violence of the symptoms by various other means for two days, I took the saturated tincture of myrrh, and with it *saturated* the monstrous looking eyes. I completely filled them with the fluid, and then laid a cloth over them wet and dripping with the same. The child cried lustily for a few minutes, but soon became easy and fell asleep.

The tincture was re-applied three times a day for two days; and once on each of the two following days—when, that is in four days—the cure was complete, the eyeballs having sunk to their natural size, and their surface assumed its healthy appearance.

In the case of ADULTS, the same *local* application is effectual, but not so soon; and, besides appropriate constitutional accompaniments, it requires to be continued for several weeks *after* the more prominent symptoms have subsided. On these occasions it is generally best combined with some *astringent*—such as the Geranium maculatum, Statice limonum, or strong infusion of Sumach berries.

FOR SCROFULOUS OPHTHALMIA

More special attention is, of course, required to the state of the *constitution*. The same remedies will for the most part be necessary as in other manifestations of the same affection. [See Lecture XII.]

The *local* applications will have to be, almost invariably and from the beginning, the *stimulants* heretofore mentioned, or other equivalent ones. More powerful means are often necessary. The mild caustic, for instance, may be introduced, in weak solution, especially if there be *pustales* or *ulcers* upon any part of the eye.

This *dissolved caustic* is a good application in *any chronic* form of ophthalmia, which has advanced to ulceration or pustulation, the strength of the article being regulated by the state of the part and the effect produced upon it.

GONORRHEAL OPHTHALMIA.

For this disease—which we have been told "unfortunately admits of no relief"—I recommend you, without hesitation, the same *general* remedies and regimen as for the original clap. With these and applications of the *caustic solution* to the eye—preceded by, or perhaps alternated in the early stages with cooling lotions—I have relieved several cases of well marked and *confessed* gonorrheal character.

The more *chronic* stages I treat with the same applications as I have recommended for other chronic cases, combining, however, the occasional use of the caustic washes, and being less anxious to arrest the discharge.

If the patient have a *gleet* from the original seat of the disease, inject vegetable caustic into the urethra, till you get up a free discharge, resembling that of the acute gonorrhea. Treat this as will be directed for that disease, and when it is *properly* cured, the "translated" or transplanted disease of the eye will be easily managed, or disappear of itself.

Perhaps this reproduction of the original disease, without adding to its virulence, would be right in all serious cases, where the eye is in much danger, even though there should be no gleet. It is certainly better than the old prescription of some metropolitan surgeons for the gleet itself; which was actually a *re-inoculation* with the original virus!—"Go and get a fresh clap!!"

Never in these cases, neglect the *Irritating Plasters* to the back of the *neck* and the front of the *arms*. Keep them on as long as there is any visible disease in the eye, and those on the *arms* still longer.

In Conclusion,

I can not too strongly impress on your minds the value, in all obstinate or chronic cases of eye disease, of a constant use of the lye bath. [See Introduction.]

In *all cases*, too, let it be borne in mind, that any constitutional *taint*, or bilious or gastric *derangement*, must be corrected, before you can expect to do anything more than palliate the symptoms of the local disease.

Still this, like all general rules, may have its *exceptions*. Lingering cases may continue to present a very bad appearance, yet want nothing more than a touch or two of something to remove the *locol debility*. In illustration of this, I may remind those of you who were here last winter of an interesting scrofulous case that occurred in a member of the class. On his way hither from Texas, he had been attacked with acute conjunctivitis of one eye, which after a time extended to the other. After getting among us he had been prescribed for, and much of the painfulness and other acute symptoms had been removed. Still the intolerance of light was such that he was confined to his room, and obliged to keep it perfectly dark. When I was requested to visit him there, he had been thus shut up in the dark for most of two weeks; and as the eyes were still excessively "irritable" *to light*—causing excruciating pain—I found him still using cooling and emollient applications. I immediately determined on a complete change of treatment, and, without telling him what I was going to do, I took a phial out of my pocket and filled one of his eyes with the saturated tincture of capsicum. He cried out bitterly against the injury and surprise. While he was complaining, however, the smarting ceased, and gave place to a sensation of relief that made him change his tone. I then took down the window curtains, and he found that he could even bear the full blaze of light, but for the sensibility of the other eye even when protected by its lid. I treated it in the same manner as its fellow; and he was delighted to have his room lit up again. I directed two or three repetitions of the same simple application during that and the succeeding day. The next morning he was in his place in the class rooms *taking notes* of the lectures. He seemed even to incur no risk by this sudden return to the use of his eyes; but, as a precaution, kept an irritating plaster on the back of his neck, and treated his eyes occasionally to a drop or two of the tincture.

[For my views and treatment of diseases of the eyes, see Eclectic Practice of Medicine, page 496 to 526, inclusive.]

LECTURE XXV.

OPHTHALMIA—STRUCTURAL VARIETIES.

Local and structural distinctions—Conjunctivitis and O. Tarsi, results and treatment, mechanical and other—O. Schlerotica, constitutional as well as local treatment—O. Corneæ, distinctions and reference—O. Iridis, peculiar symptoms and causes, active measures required, peculiar precautions and complications—Procidentia Iridis—Choroiditis and Retinitis.

The distinctions in inflammatory disease of the eye, to which I have been drawing your attention, are founded on the character of the diseased action, or that of the patient's constitution. Another principle of division requires consideration. The ordinary cases of inflammation of the eye—and those, therefore, which are commonly included under the term "ophthalmia"—are such as involve primarily and principally, if not exclusively the external surface. They are, therefore, more technically described as varieties of *conjunctivitis*.

Other varieties have now to be noticed, distinguished by the particular *part*, or rather the peculiar *tissue* of the eye concerned. These *structural* distinctions and designations sometimes coincide with the *specific* one founded on the character of the disease. Thus, inflammation of the fibrous structures of the eye, is like that of such structures elsewhere, rheumatic; while iritis and retinitis may be symptomatic of syphilis.

As a sort of local variety of conjunctivitis, I will first take up what is called

OPHTHALMIA TARSI,

or, more modernly, *ophthalmitis tarsalis.* This consists in a form of simple inflammation confined to the eyelids, and perhaps originally to the Meibomian Glands. The secretions of these glands, being altered by the disease, become irritating, sometimes very acrid. The *itching* of the eye thus caused—which is a diagnostic symptom and the principal complaint of the patient—has occasioned the clumsy name of "PSOROPHTHALMIA."

This perverted secretion of the Meibomian glands is not only acrimonious, but often of a glue-like *adhesiveness*, sealing up the eye when long closed, as in sleep, and causing considerable trouble to *separate* the *lids* again. The force necessary to effect this, keeps up the irritation, and increases the chance of the disease running into the chonic form. The *eyelashes* then not unfrequently drop off, leaving the *edges* of the lids smooth, glossy and red; which, with their baldness, occasions a great disfigurement of the countenance.

The intolerable ITCHING of the eyes, as before remarked, is the first complaint of the patient. He is obliged to be constantly rubbing them, which only aggravates the irritation. The inflammation sometimes extends to the ball of the eye. That of the lids very generally proceeds to *suppuration;* and occasionally there is *ulceration* of the tarsal cartilages.

Closure of the lacrymal duct sometimes occurs, giving rise to what used to be called Epiphora (or mechanical weeping), one form of obstruction which was mentioned under the head of "FISTULA LACRYMALIS" (page 284).

The TREATMENT for the acute form of this affection should be that directed for "simple ophthalmia." But if the disease becomes chronic—or if you are called to one of long standing, as you frequently will be, after it has been allowed to run *for years*—

CONSTITUTIONAL and ALTERATIVE treatment will be required.

AS LOCAL MEASURES, apply the solution of the sesqui-carbonate of potash once a day, following it up with tincture of capsicum and marsh rosemary. This treatment will soon change the character of the secretion, and afterward suppress it altogether.

It is worth some trouble to prevent "gluing-up" the eyelids during sleep. For this purpose let the edges of the lids be sufficiently lubricated before going to bed, with some animal oil—lard-oil may answer the purpose well enough, and is much better than olive oil, which seems to unite with the secretion and become gluey.

SCLEROTIC OPHTHALMIA.

Inflammation of the second coat of the eyeball is sometimes popularly and conveniently distinguished as

Rheumatic Ophthalmia, not only from the character of the pain and course of the disease, but from the *fact* that it occurs in persons affected with, or liable to other forms of rheumatism.

In the commencement of the disease, the PAIN is usually in the *temple*, extending downward *toward* the *eyebrow* of the affected side. When the pain becomes seated within the ball, it is constant, but much more severe of an evening or late at night.

There is, at first, no appearance of disease of the eye. There is no peculiar discharge or irritability, nor any intolerance of light. Soon, however, the *surface* of the eyeball *seems* to *redden*. The distended bloodvessels are seen, on closer inspection, to run in parallel lines *beneath* the conjunctiva, terminating at the margin of the cornea: they are so numerous as to have the effect of a continuous red surface. The hue, however, is not bright as in conjunctivitis, but rather of a peculiar dark, *dusky*, dingy shade.

The inflammation *may* become so severe as to extend and involve other coats of the eye.

The most important part of the

TREATMENT in this affection, is that directed to the GENERAL system, particularly

The emeto-cathartics, and general sudorific means, recommended for a violent case of conjunctivitis. The measures should be thoroughly carried out.

Counter-irritation to the back of the neck and behind the ears must not be neglected.

Cooling applications may be made to the eye *as palliatives*, though they appear to be even injurious, except in the very earliest stage. A much better resource is

A warm stream of water poured on the temples.

In fact *local* applications of any sort (except the counter-irritating), are of but little consequence, unless

In the CHRONIC STAGE, when stimulating lotions seem sometimes to do good, though, even then, they are much less to be relied on than in most other forms of ophthalmia.

Constitutional means are still all important; and among them the *tonic alteratives* are not to be forgotten.

Among the best applications to the eye itself will be found the alkaline solutions (those of the bi-carbonate as well as the sesqui-carbonate of potash). A few washes with one of these has often dispelled all redness from the eye after other means have failed. I have used these with the *stimulating* ingredients recommended in other forms with a good effect; and sometimes alternated this combination with *astringents*. These measures are of course inapplicable while any acute symptoms or *complications* are present. In such circumstances your main dependence must be upon emetics and diaphoretics.

However, even then, the *hop fomentations* to the eyes may be made use of, and followed up with the slippery elm poultice wet in a strong decoction of hops. A soothing and kindly influence may also be obtained from a poultice of *poppy leaves*.

CORNEITIS.

Acute inflammation of the Cornea, is unimportant as a distinct species. What is sometimes so called, being strictly speaking, but a variety of *conjunctival* inflammation, over and about the cornea, in which that part of the eye *may* become involved and destroyed, as already mentioned. It occurs chiefly in young persons of a scrofulous constitution, about the age of puberty. Its TREATMENT requires no peculiar directions. In the *chronic* stage, astringents are often indicated. Some of the consequences, as they affect the vision, by obscuring the transparency of the cornea, will be afterward noticed under "Opacity."

Special chronic disease of this texture will also be treated under "ulceration of the cornea," and "staphyloma."

IRITIS, OR IRIDITIS.

Inflammation of the IRIS is accompanied with great sensibility of the eye, and intolerance of light, etc.

The *pain* is lancinating, extending from the eyebrow to the orbit, and darting in differing directions through the ball.

There is *no redness* or change in the outer coat of the eye, though vessels of the second sometimes become affected and enlarged as in *sclerotitis* proper.

On the anterior surface of the iris, red vessels may be discovered; and its swelling, more or less in different parts, causes the *pupil* to appear *contracted* and irregular in shape.

Inflammation of this delicate organ rarely proceeds to ulceration, or even suppuration, but *adhesions* are not unfrequent or unimportant terminations. A deposit of lymph may be thrown out on the surface or rim of the iris, and by obstructing its freedom of action, interfere seriously with vision. Sometimes it is produced in so large a quantity as to fill the anterior chamber of the eye, occasioning immediate obstruction of sight.

The CAUSES of iritis are some of them common to other varieties of ophthalmia. The books enumerate wounds, bruises, sudden exposure to cold, or a strong light, and last, not least important of *predisposing* causes, those inseparables—those Siamese twins—"syphilis and mercury"—I beg pardon: I ought, of course, to have said, "the *abuse* of mercury!!"

Scrofula, gout and rheumatism, are also mentioned as producing distinct varieties of iritis. These distinctions are unimportant, unless presenting obvious *indications* in the actual case.

THE TREATMENT of iritis is very important, as it is not only a peculiarly acute and painful variety of inflammation, but runs its course very rapidly, and unless arrested or modified, by prompt and effectual measures, will probably occasion irreparable mischief.

All the measures heretofore directed as likely to divert inflammation from the eye, may be resorted to in this case; and these measures must, of course, be for the most part *general*.

Active emetics, and hydragogue cathartics, followed by thorough sweating, should be persevered in until the symptoms abate. [For particular means and methods, see the preceding Lecture, under the different forms of Acute Ophthalmia].

Cooling applications to the eye *may* do good. Showering the *temples* is a more likely adjuvant (but even this measure should be resorted to with caution, and immediately desisted from, if it is found, as it may be, to increase the patient's suffering).

Your most important means, by far, are the *sudorific*, external and internal. You need not be under any fear of producing dangerous irritation or prostration by *continued nausea*, when that state is kept up by the means we are in the habit of prescribing. Our common emetic mixture (For. No. 4) never "runs off by the bowels," and its effects on the nervous system, when sufficient to create alarm, are very evanescent, and disappear almost as soon as the medicine is discontinued. We may keep the patient under the medicinal influence ten, twelve, or even eighteen hours. It is rarely necessary, however, to keep up the action or nausea for half that time. The more distressing symptoms usually yield in a few hours, when a free cathartic has previously operated. But though you may thus easily allay pain, and other acute symptoms, iritis is but too liable to assume

The CHRONIC FORM, when the discharge of coagulable lymph, before spoken of, will continue. Hence the *treatment* also must be *continued.*

The same stimulus, before directed, may be still applied to the ball of the eye. If the tincture of capsicum is relied on, it must be the *saturated tincture;* a weaker preparation will be of little avail.

To prevent permanent *contractions* or *adhesions* of the iris, with consequent closure of the pupils, by the discharge of lymph, the extract of belladonna, or stramonium, is recommended to be applied on the surface of the eyelids, or eyebrows. These parts should be kept wet with the article chosen, from twenty to forty minutes, so as to effect a considerable dilation of the pupil. This measure should be resorted to several times a day. If it is, it will effectually prevent the danger to be guarded against; while, according to my observation, it does not at all interfere with the more directly "anti-phlogistic" means relied on to remove the cause of the danger.

The subjects of iritis are not unfrequently of very *debilitated,* broken down constitutions. For such, *tonics* must be prescribed.

Our common Restorative Bitters (For. No. 7) will be very suitable, or the Alterative Syrup (or the two in connection, the latter night and morning, the former at noon). In this case, too, the Irritating Plaster, applied as before directed, will be found to exert a most favorable influence. [See page 294.]

When there is reason to believe the disease is but a symptom of *syphilis*, we must, of course, take means to "remove the cause"—to eradicate forthwith every trace of the poison from the system.

When it is attributable to the "syphiloid" poison of *mercury*, the Acid Bath (see Introduction), should be substituted for the Alkaline, and used regularly once, if not twice, a day. Acids should also be taken internally.

Unfortunately, however, we often have both syphilis and mercury to contend with at the same time—the *twins* are not only so much alike that you can not tell which is which, but have grown together, and no surgery can separate them. In such cases, the baths and other measures, peculiarly appropriate to each, should be alternated.

If *active* inflammation should at any time recur, discontinue the chronic treatment, and return to the more anti-phlogistic remedies and local emollients.

You may succeed in relieving those *relapsed cases* by the caustic solutions. By some such means you will occasionally succeed in a few days. More commonly,

You will find Iritis a disease which it will take you *weeks*, if not *months*, entirely to eradicate. But, by the persevering use of more or less of the various means pointed out, especially of the Irritating Plaster, and attention to the general surface, you may almost always succeed. As an additional measure, I may mention the Scrofulous Syrup (For. No. 14) as likely to suit not a few cases.

I have always succeeded in entirely restoring the sufferers from this deep-seated difficulty, except in two instances. These were in old, debilitated and otherwise diseased subjects; and even these were so far relieved as afterward to suffer no serious inconvenience.

CHOROIDITIS AND RETINITIS

Might be mentioned, for the sake of order. But the choroid coat is only likely to be inflamed in connection with the iris, and will require no separate attention. Inflammation, irritation or exhaustion of the retina, as of other parts, may be easily brought on by over-exertion, in connection with other irritating or debilitating influences on the nervous system. All that need be said of it, will occur when treating of *Amaurosis.*

PROCIDENTIA IRIDIS.

This is the name now most generally given to the case, where there is an external *protrusion* of the *iris* through a wound or ulcer in the *cornea* and its coverings.

The *pain* attending this accident is very severe, and the *intolerance of light* peculiar. The least impression of light on the exposed iris is excruciating.

The *pupil* always assumes an unusual *shape*—generally oval. The form, however, depends on the site and size of the opening in the cornea.

Adhesion is apt to take place between the iris and the parts through which it passes, if it is allowed to remain but a short time exposed; and the protruding part becomes hardened and often ulcerated. Air and light seem sufficient irritants to this delicate part to excite inflammation.

If you are called soon after the accident has occurred, endeavor to.

Return the iris. This can sometimes be easily effected, and when it is done, as it always should be, *immediately*, there will be no further difficulty. Even if some time has elapsed, this *replacement* should be *attempted.* I give this direction on the supposition of a wound. When ulceration of the cornea is the cause, the iris can not be retained. If the protrusion has been allowed to remain until ulceration or adhesion has occurred, it is too late for mechanical restoration. All your

Treatment must then be to *cure the ulcer* as soon as possible. This will be effected by applying the mild caustic, followed by emollients.

The caustic will *allay* the pain and irritation, although it causes some smarting when first applied. Under its influence, the ulcerative and *ulcerating* discharge will become healthy and soon cease altogether.

The *portion* of iris projecting beyond the adhesion will generally be removed by the caustic. If, however, after a fair trial it resists that means, let it be touched with the pencil of caustic potash, or a camels hair pencil wetted in it, applying vinegar immediately after to protect the neighboring parts.

A safe contrivance for such application is to

Spread over the eye a sort of poultice or crust of slippery elm wet with vinegar, leaving or making a hole over the ulcer or point to be cauterized. The application can then be made through this hole, or through a short glass tube fixed in it.

The milder caustic, however will generally be sufficient, and will do no particular harm if it comes in contact with sound parts. The inflammation, if any, which results from it is quite transient.

LECTURE XXVI.

AMAUROSIS AND OPACITIES OF THE CORNEA—STAPHYLOMA AND ULCERS OF THE CORNEA.

Amaurosis or Nervous Blindness—Symptoms and diagnosis—Causes—**Treatment**, general and local, that will cure or prevent most cases.

Cataract, and other Opacities, with illustrations.

Opacities of the Cornea—Nebula, Albugo and Leucoma defined and treated—Means for generally removing *nebula* without inflammation or division of vessels—More Powerful and more Constitutional measures for *albugo*—Indications in *leucoma.*

Ulcers of the Cornea—Described—and treated with more or less powerful means—Acute Symptoms.

"**Staphyloma**"—Restricted to variety of opacity, with protrusion of the Cornea—Puncturing the Eye—Means for avoiding that Operation—Causes where that *relief* was, and where it was not resorted to, and their different results.

Amaurosis.

The eye may appear sound and perfect so far as we can trace its complex and delicate mechanism; it may reflect the general healthfulness of the body, and seem to us still the mirror of the soul, varying its expression with every shade of thought or feeling, yet all the while be virtually dead—be no better than a glass eye, in respect to the great functions to which all its others are secondary. This *loss of sight* in a seemingly sound organ is distinguished as "nervous blindness." AMAUROSIS, the technical name, may, indeed, be defined *paralysis* of the *optic nerve.*

The early stages of this disease are apt to be neglected. The first SYMPTOM is a sensation of cloudiness, as if vision were obscured by smoke; or it seems to the patient as if threads were drawn across the eye. Sometimes he sees or imagines he sees blue and yellow specks; at others brilliant spectra intermingled with darker spots. These obstructions or perversions of sight continue to increase, until the patient gradually loses the sense altogether. Not unfrequently, however, he is unconscious of his loss. It may be months after the subsidence of these anomalous appearances in one eye, before the person discovers that he is blind, although the probability is, that in all such cases the blindness was complete the moment he ceased to see the spectra alluded to.

The disease generally progresses with very little *pain*, sometimes none at all. The patient suffers more from anxiety of mind. In the early stages there is commonly, however a determination of blood to the head.

The pupil is, in most cases, slightly dilated, and does not regularly enlarge and contract like the sound eye with varying degrees of light. The DIAGNOSIS is, however, often difficult. It will sometimes take several trials to find out which is the affected eye. I have found it necessary to blind the sound eye in order to ascertain the sensibility or lack of it in the other, as a completely blind eye will sometimes contract, on the approach of a strong light, from sympathy with its fellow.

The most obvious of assignable CAUSES is any excessive application of the sight—reading, writing, fine needle-work, etc. Gazing at the sun to watch an eclipse, or at an exhibition of the Drummond light, has been known to produce it. These occasional causes, however, presuppose more general ones. The predisposing cause may be organic diseases of the brain or nerve. The patient is frequently ascertained to have been long afflicted with head-ache, costiveness, dry skin, etc. Evidences of inequilibrium in the circulation and local irritation are seldom wanting. Syphilis and mercurialism may be also distinguished among remote causes. Congenital amaurosis may be set down as incurable.

Treatment.—The first thing, as common sense would dictate, is to prohibit much exercise of the eye. Reading, needle-work at night, and all straining of the sight, must be forbidden, as well any particular use or abuse, that may seem to have produced or to be aggravating the evil.

As medicinal treatment, give your patient an occasional hydragogue cathartic. Emetics are also very useful. I am in the habit of directing a pretty active emetic, our acetous preparation (Form No. 4), to be followed by the hydragogue cathartic, and repeated once a week; keeping the bowels regular in the meantime by gentle aperients, whenever necessary—small doses of podophyllin, leptandrin, the euonymus or the antidyspeptic pills (Form No. 8).

With these derivative means it is of paramount importance that the *general surface* be strictly attended to. The patient should be regularly bathed or sponged twice a day, in weak lye, applying brisk friction with a harsh towel after drying. The *feet* should be immersed in hot water at least once a day for a considerable time, the object being to keep the capillary vessels charged even to repletion. The *head* may be occasionally but *cautiously* showered with cold water. Take care not to continue it so long that reaction is either too violent or too tardy.

Keep up strong *counter-irritation* at the back of the neck by means of issues—or, what is better, a large irritating plaster from one mastoid process to the other, and extending down the whole of the cervical vertebræ. Let this stay on as long as the patient will endure it. It is well in some cases to precede this measure by cupping and scarifying the surface; after which the plaster will act more speedily and efficiently. When it can be borne no longer, let the sores heal, applying only simple cerate. If the disease does not abate, reapply the plaster, or apply caustic potash just below each maistoid process, until it disorganizes the surface, creating two issues of the size of a dollar. They must be kept open by retouches of the caustic, or by covering them with the plaster, which will cause them to discharge without occasioning unnecessary pain.

Another measure of peculiar efficacy that I would recommend, is to pour on the *temples*, two or three times a day, a small stream of water from a considerable hight. It should be directed to a spot a little behind and above the external canthus of the eye.*

Shocks of *electricity* are *sometimes* found beneficial—placing the patient on the insulated stool and drawing sparks from the eye—the best means of applying it is the electro-galvanic machine.

Although *local applications*, directed to the eye, are not to be relied on alone, they may be made to aid considerably in the cure. They should be of a very stimulating character. We have been accustomed to apply with good effect, the tincture of capsicum, beginning with a dilution, and gradually increasing in strength until it could be applied pure to the eyeball.

In conclusion, I must remind you that the restoration of the function of the *skin* is, perhaps, of more importance than any other part of the treatment, while it is the very thing that is most neglected in ordinary practice. It is in vain to attempt to restore the sight, while the whole surface of the body is out of order, and with it, of course, the bowels. When this point is attended to, the cure may be effected in the ordinary run of cases, as a matter of course. Hope may be held out wherever there is not organic disease of the optic nerve, which there *is not* in the great majority given over as "incurably" blind. I have had many cases of complete blindness in one eye, or both, and restored them all.

CATARACT.

This is, perhaps, the most interesting cause of blindness, next to that last treated of. While, however, Amaurosis is properly described as "nervous blindness," this, as well as corneal affections, to be next considered, may be distinguished as *mechanical* blindness. *That* may be only a functional disease, *these* are necessarily organic. In the former, the proper organ of vision is affected; in the latter, some of its media are alone concerned. Hence the obstruction of vision may, in some of these cases, admit of a merely mechanical remedy. This being especially the case in regard to the various forms of cataract, that subject will be fully treated of in Part II.

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* I had frequently noticed, before becoming acquainted with the discoveries of Dr. Buchanan in Neurology, which afford an explanation of this practice, that patients, nearly blind, might be enabled to see clearly for a short time after the operation. When the stream is poured on other parts of the head, at a greater or less distance from the spot in question, the same impression on the optic nerve is not made.

The general distinction between this affection and opacities *of the cornea*, is, that the opacity is here *behind* the pupil, either in the crystaline lens itself or its covering. Hence by the removal of absorption of these parts, vision may be restored. Such absorption, however, can not be induced by external applications, as will be shown to be practicable in some forms of corneal opacity.

OPACITIES OF THE CORNEA—NEBULA, ALBUGO, LEUCOMA.

NEBULA, or "cloudiness," is the result of acute ophthalmia of the conjunctiva, leaving a preternatural deposit which has become permanent, and even organized, between that membrane and the cornea. It may be attended, also, with an enlargement of the vessels of the conjunctiva where it covers the cornea,

This species of blindness is not complete. It is, of course, *external* to the cornea itself, and comparatively *superficial.* The opacity may cover the whole of the cornea, yet the patient can distinguish objects as through a vail; and his iris and pupil may be seen through it. At other times the nebula is only scattered or in distinct *specks*, each of which is furnished with separate vessels. These vessels continue to support (or prevent the absorption of) the deposit, which occasions the difficulty to vision.

ALBUGO, in some respects, resembles nebula, chiefly differing from it in being *deeper seated.* It is also referable to some preternatural deposit of lymph between the laminæ of the *cornea itself*, to which it gives a *pearly white* appearance.

LEUCOMA differs from the two other varieties of opacity in being more dense, and of a *chalky white* color, although with a shining aspect. It is a transformation of the substance of the cornea itself and an adhesion to the mucous covering. It may result from a small-pox pustule or a wound in the part.

TREATMENT OF NEBULA, ETC.

Simple NEBULA may generally be removed by a persevering application of strong astringent and stimulating washes. In several cases I have been under the necessity of applying a strong solution of the sesqui-carbonate of *potash*—in one instance this caustic in powder—for several days.

In almost all cases, however, the compound *tincture of myrrh*, (Form No. 15) alternated with some astringent lotion, will suffice. The tincture of sanguinaria has been successfully used; but this occasionally produces irritation and even inflammation—without, however, being generally followed by serious injury. It should be used with caution, if at all. In one instance, which had resisted other treatment, I knew this article to have been applied with the effect of producing inflammation—but when the inflammation subsided, the *nebula* had disappeared. This is in conformity with a general law, that recent organizations are more easily disturbed and destroyed than the original normal ones. Still inflammation is not to be recommended, as a means of exciting the necessary change in the parts, and bringing about absorption. It is like a revolutionary instead of a reformatory method.

Division of the *vessels* leading to the part is sometimes resorted to. This may be proper where their trunks have become very large; but I have never found it necessary. If deemed advisable, the largest trunks and branches may be elevated by the forceps, and *pieces* taken out of each by the curved scissors.

In ALBUGO, where the obstruction is within the cornea, much more stimulating applications are required. The *caustic solutions* should be the washes from the beginning; and they should be continually increased in strength, to as great an extent as the eye can bear without being excited to inflammation (which revolutionary or *sanguinary* result should of course be guarded against, although it *may* end favorably, as before mentioned).

The stimulating *astringent* wash heretofore recommended, may be alternated with the alkaline solution.

Loaf sugar, finely pulverized, has been used with apparently good results. I have applied, with undoubted advantage, an impalpable powder of the *peroxide of iron*. Both these articles are to be laid on *dry*.

Honey, applied directly to the eye as hot as it can be borne, has been known so to stimulate the absorbents, as to remove the obstructions in a very short time. But this is an application that causes the patient extreme pain. If it is relied on, it should be used night and morning.

Any application calculated to stimulate the absorbents of the part will benefit more or less.

For LEUCOMA, pretty much the same treatment is indicated as for the other species of opaque cornea, but the result is much more doubtful. Restoration is rare under any measures that can be adopted.

The CONSTITUTIONAL TREATMENT for all these varieties of opacity is the same in character. In the *first*, however, much less is often required; and but few cases of the *last* mentioned kind will be effected by any measures you can adopt, general or local. In *albugo*, however, frequent repetitions of hydragogue cathartics and strong diuretics will aid much in promoting local absorption. Any *alteratives* you may use should be selected from the class most likely to aid in this essential object. The *Irritating Plaster* is as applicable with this object in view, as when it is used as a direct *counter*-irritant. *Showering the temples*, as recommended for chronic ophthalmia and amaurosis, will often be found a useful adjuvant.

ULCERS OF THE CORNEA.

These not unfrequently result from the same cause as in other parts of the body, and are more serious as always endangering vision. They occur not only as the consequence of mechanical injury, or of some variety of ophthalmia, but also of some strong or peculiarly irritating substances thrown into the eye.

The *whole cornea* may be in an ulcerated condition, or the ulcer may be very *small*, appearing on it but as a *speck*. The latter is not always the less dangerous form, as the ulceration is often "burrowing;" and may work its way deep in between the layers of the cornea until it spreads all over the anterior chamber of the eye.

The *edges* of the corneal ulcer are generally elevated and rough; and its *surface* is commonly covered with a brownish pus, similar to that of indolent ulcers in other parts.

Extreme *pain* frequently exists, not only in the ball but the *lids*—attributable, mainly, to the irritation of the rough and projecting edges of the ulcer. To relieve this complication begin your

TREATMENT, by touching the sore with powdered caustic by means of a camel's hair pencil—having first fixed the ball by means of the *speculum*. [For a description of a new instrument for this purpose, see plate, Part II.] This caustic application should be *repeated* twice a day, the slippery elm poultice being applied in the intervals. Under these measures the dark covering will soon pass off, and the affected part change its appearance to a more florid hue. The *surface* of the *eye* should be washed off at each dressing with warm milk and water. Should a little of the caustic get into other parts, it may thus be removed, though it will not produce dangerous inflammation.

As soon as the ulcer has a *healthy* appearance, diminish the strength of the caustic, occasionally washing out the eye with cold water, or an infusion of the pith of the sassafras, or some other soothing collyrium.

If, however, the indurated character of the ulcer should remain after four or five days' application of the caustic powder you may resort to the

Potassa fusa, taking great *care* to have the eye secured and sustained by the speculum. Then, with the point of a small pencil moistened in the caustic, *barely touch* the ulcer. Observe it closely, and as soon as it *begins to change color*, put on a few drops of vinegar—which should be always ready at hand. This will at once neutralize the alkali and prevent its excoriating the surrounding parts. With these precautions, I have used the caustic potash successfully in three cases. The sesquicarbonate, however (i. e., the "vegetable caustic"), is unattended with danger, and will be sufficient in nearly all cases.

I have spoken of ULCERATED CORNEA as a chronic disease. It may, however, occur in connection with *acute* inflammation, or even itself be the occasion of it. Should this be the case when you are called, or arise at any time during treatment,

Any *acute symptoms* must be *first* attended to, with the same general and local means as directed in other cases.

Even in the chronic form, more or less

Constitutional treatment is required, though this is not so often the case, or so essential, as in most other forms of eye-disease.

STAPHYLOMA

Is the name given to a disease of the substance of the cornea, resulting in thickening and opacity of its layers, and a considerable protrusion of the anterior surface. This last circumstance gives name to the affection. "Staphyloma" means swelling out *like a grape.* There may be staphyloma of the sclerotic coat also; but that is less frequent and less important. "Staphyloma Iridis" was spoken of under the more descriptive appellation of "Prolapsus or Procidentia of the Iris." Confining the term to cases in which the cornea is involved,

"*Complete* Staphyloma" implies that the *whole* of the cornea has become *opaque.*

"*Incomplete* Staphyloma" is when the cornea is still in some degree *transparent,* or at least *translucent,* and vision to a proportionate degree is yet possible.

In advanced stages of the disease, the before enlarged cornea is sometimes absorbed, when both the anterior and posterior chambers of the eye seem to be filled with matter more or less opaque.

Treatment in this affection is seldom of any avail, so far as the restoration of sight is concerned. When any

Active inflammation is present, it may be generally relieved, but the patient will be left blind. Inflammation may be so high, and the *pain* attending it so great, that we are directed to

Puncture the *eye* and let out the humors. But I have hitherto always *succeeded* in relieving the patient *without* resorting to this measure, and I am inclined to think that the powerful means we possess for subduing inflammation will be sufficient in all cases. Recollect that if, by avoiding this puncturing operation, simple as it is to perform, and satisfactory to the patient *for the time,* you only succeed in partially restoring or preserving *the sight,* you do him an inestimable benefit. I would, in all cases, enjoin on you to try to *preserve the sight,* without any positive assurances that you can do so. Even *should* it be *necessary* to puncture and let out the *aqueous humor,* the other humors may be retained. In one *case* that fell into my hands, *after* having been punctured some sixty or seventy times, a persevering use of means, chiefly *general,* not only restored the eye to health, but to partial *vision.* This, be it noticed, was after the organ had been "relieved" by tapping every day, except two, for nine weeks—so rapid had been the reaccumulations, and hopelessly persevering the "surgery" before depended on!!

How any man could continue repeating such a mere mechanical expedient, day after day, I can not conceive. I should have resorted to other means, if only to relieve myself from such "work without hope."

In justice to the practitioner responsible for the case alluded to, who is a celebrated *though* " regular " eye doctor, I ought to state that he *did* also make use of other means. Among the local means applied most faithfully, after consultations in the case, were acetate of lead, nitrate of silver, and finally sulphate of copper. The case was not hastily or carelessly abandoned as hopeless.

When I saw the patient, in company with another Eclectic practitioner, the affected eye was highly inflamed and swollen, and the other was in a very weak and irritable condition, unable to bear the light. There was excessive pain in the head as well as the eye, with other symptoms of cerebral implication. The surface, especially about the neck and affected side of the head, was the seat of an *erysipelatous eruption*, which, we were informed, was not a *consequence* of the eye disease, for it had existed for *a year before* the eye was first inflamed. The rest of the skin was dry and husky, and he had *not* sensibly *perspired* for *several months.*

Appropriate means were at once resorted to for curing *the disease of the skin*, and restoring its functions. It is to the neglect of this *all-comprehensive* measure, that so many failures in the ordinary treatment of chronic cases are to be attributed, more than to any other one thing.

The alkaline bath, with the Irritating Plaster, and tincture of capsicum to the eye, in connection with other ordinary means, restored the case, as far as restoration was possible, in a few weeks. The relief from the commencement, was sufficient to prevent any necessity for another repetition of the tapping operation. Had it not been done so often, and the cornea so haggled and scarred, I know not but the sight might have been *completely* restored.

I might mention a score of similar cases. My object in mentioning any, is to impress on your minds the necessity for *attention*, *discrimination*, and "*perseverance* in well doing." Very recently I had to treat a young lady, whose eye from maltreatment in the first place and neglect afterward, was in a condition similar to that of the young man I have been speaking of, only, fortunately for her, the eye had escaped the puncture. Her disease had been originally but simple opthalmia. All the vessels of the cornea, as well as conjunctiva, were now in a congested state. She was blind to all practical purposes—but could just distinguish some objects in a strong light, for the short time that she could bear any light at all. In her case, the dry powdered caustic was applied four or five times at intervals of three days. The other measures, generally applicable, were also used. Health and *sight* were entirely restored.

LECTURE XXVII.

AFFECTIONS OF THE EYE, CONTINUED.

HYDROPHTHALMIA—General and Partial—Symptoms and Progress—Treatment for avoiding Paracentesis Oculi—That operation a Dernier resort, and then but a Palliative—PTERYGIUM—Description and Varieties—Discutient measures often sufficient without an operation—ENCANTHIS—Distinction from Pterygium—Inconvenience and frequent malignancy—Excision not "the only remedy"—Two Cases in Proof—HORDEOLUM and GRANDO—Inflamed or Indurated Tumors in the Lids—Treatment of each—*other* TUMORS and AFFECTIONS of the LIDS and EYES.

DROPSY OF THE EYE.

UNCOMPLICATED HYDROPHTHALMIA is a disease of rare occurrence, even in those constitutionally predisposed to serous accumulations in other parts.

The SYMPTOMS are a *gradual* enlargement of the globe of the eye, without, at first, much pain or injury to the sense of vision. As, however, the accumulation increases, the membranes become very tense, and the eyeball is visibly *protuberant* from the socket. The *pain* then becomes excessive, and sometimes extends to other parts, giving rise, among other complaints, to violent cephalalgia. At this stage, also, the *sight* is considerably affected. The aqueous humor becomes turbid and opaque. The iris looks as if deeper seated in the eye than natural; and, whenever the eyeball is moved, appears to be floating and tremulous. Finally, if the morbid fluid is not absorbed or evacuated irritation and active inflammation set in, and terminates in *suppuration*, to the destruction of the eye.

Partial serous *effusions* sometimes occur between the separate coats—as between the sclerotic and the choroid, or the choroid and the retina—but these cases are still less frequent than the accumulation within the chambers. The *vitreous humor* is sometimes absorbed, we are informed, in consequence of the *pressure* from effusion between the choroid and schlerotic coats.

TREATMENT for this affection is, of course, in the first place, such as is calculated to remove dropsy in general.

Active hydragogue *cathartics*—such as our common Physic (For. No. 3) combined with podophyllum, or a very small portion of podophyllin—are best given in divided doses, so as to keep up an almost constant drain through the bowels, from twelve to twenty hours, according to the strength of the patient. Active *diuretics* should be used at the same time.

These combined measures should be repeated once a week; and what may be called *alterative doses* of the same or similar articles, during the intervals, so as to keep a steady, but milder impression of the same tendency. The Alkaline *Bath* should also be brought to bear upon the *drainage* from the surface, its impression being aided by brisk friction and stimulants.

Stimulants should also be applied, with gentle *compression*, to the EYEBALL—recollecting never to press on it so much as to increase the pain. *Counter-irritation*, at the same point and by the same means, as recommended for other diseases of the eye, may be resorted to with advantage.

Should the ACCUMULATION *go on* in spite of these active measures, or should it have been too great, when you are first called, making *immediate relief* indispensable, you may be obliged to

PUNCTURE THE EYE. This operation can be performed with a common lancet, if you have not a couching needle at hand. The point may be introduced into the anterior chamber through the cornea; or—where it is less likely to do permanent injury—behind the junction of the cornea with the sclerotic coat, into the posterior chamber, as is usually directed in operating for cataract.

This *tapping* of the eye should be regarded as a mere *palliative;* requiring the same means afterward to obviate reaccumulation, which if used in time, or to a sufficient extent, would have prevented the necessity for resorting to it. It is not a triumph of surgery, but a confession of its inefficiency; and unlike amputation, and some other of its "*handy* work," it is not final, removing for ever the evidence against itself.

PTERYGIUM.

This is a name given to a very common disease, or rather accidental formation, which is not generally of sufficient importance to be accounted morbid. It may, in fact, be nothing but hypertrophy and extension of the Plica Semilunaris. It is a mere membranous reflection of a portion of the conjunctiva, appearing as a triangular patch at the inner canthus, and spreading from the caruncula lacrymalis toward the cornea.

In its early stages, it is *light-colored*, containing few blood-vessels. As it is thus but a slight disfigurement, and no inconvenience, it excites but little attention. When inflamed it reddens, and its vessels are then very distinct.

It may *extend*, however, so as to cover more or less of the cornea. Its growth is more rapid when irritated or inflamed. It rarely spreads all over the cornea, commonly ceasing to advance after covering a small segment of it. Instances are mentioned, however, where a growth has commenced from each corner of the eye, and gone on to meet the opposite one in the center.

That proceeding from the external canthus is still less serious than the other, and sometimes distinguished as "pinguicula," from its more frequently fatty appearance. Two varieties are mentioned by writers, the merely *membranous* and the *fleshy*. The variety called PANNUS, is sometimes cancerous.

As pterygium is an abnormal or adventitious growth, which, as a general rule, is less firmly organized than regular or original parts, the

TREATMENT plainly indicated, is such as will excite the *absorbent process* to great activity. For this purpose, if the patient's health be good, it will not be necessary to give him medicine. LOCAL APPLICATIONS will do all that should be done; and if they fail, an OPERATION is easy and effectual.

I have had better success with the sesqui-carbonate of potash, than with any other article; though I have generally used other stimulants in connection with it. You may frequently succeed in a *few days* by a little of this

Powdered caustic, put on with a camel's hair pencil, of a morning, and a few drops in the evening of the tinctures of myrrh and capsicum (*aa*).

These measures, however, have sometimes to be continued several weeks, or even months. They may be altogether insufficient.

[For the operation, then to be resorted to, see Part II.]

ENCANTHIS.

This affection of the eye is nearly related to that last described. It is, however, of a more decidedly morbid character, and not unfrequently malignant. Even the "encanthis *benigna*," so called, is a source of great inconvenience. It arises from the same parts as the pterygium; but while that appears as a mere superfluous fold of the mucous membrane, perhaps a little thickened, forming as it were an additional *over*-coat to a part of the eye,

ENCANTHIS is a substantial enlargement or outgrowth of the caruncula lacrymalis, and plica semilunaris. It is soft and of a livid hue. As it enlarges it becomes smooth on its surface, which is seen to be numerously supplied with varicose vessels.

Three consequences of this excrescence may be distinguished: first, by its size and position it prevents complete closure of the eye, and otherwise impedes the free play of the *lids;* next, both by compression and displacement of the *puncta lachrymalia*, it keeps the eye constantly suffused with *tears;* and, lastly, by these and other modes of irritation, it excites and keeps up a troublesome OPHTHALMIA. Other parts may be so involved as gradually to destroy the whole *eyeball.*

The MALIGNANT, or, as it used to be called, "inveterate ENCANTHIS," may become very *large*, and perhaps hardened, with lancinating pains, proneness to bleed, and other usual cancerous characteristics.

"The only remedy for this disease," according to prevalent authorities, is *excision* of the caruncula lacrymalis and vulvula semilunaris; and, we are informed, that even this "frequently fails."

How far I am from being disposed to adopt this view, you may judge from my usual protests against these "necessarily incurable" *judgments.* I see nothing in the nature of the affection in question, or of the parts affected, to render all the resources of the *healing* art unavailing. I can not say what proportion of cases ought to be cured in a disease of such rare occurrence; but this much I *can* assure you—that the *only* two cases that ever fell under my notice *were* both *cured.* The first was the

CASE of an aged gentleman, well known in Erie county, in this State (Daniel Wood, sen'r). The case and the cure were also well known, as the disease had been pronounced *cancer* by all who saw it. The tumor, excrescence or whatever it is to be called, was distinctly "encanthis" in respect of its location and origination. It had grown, however, as large as a common butternut—discharged a sanious and corrosive fluid, and was overspread with a net-work of varicose vessels which, poured out their contents on the slightest touch.

The course adopted was the following: The eye was first protected by a slippery elm poultice, wet with vinegar [as recommended under Procidentia Iridis], and the pencil of potassa fusa was freely applied to the cancerous growth, and kept there for several minutes, so as at once to disorganize nearly the whole of it. It was dressed with the simple slippery elm, which was directed to be renewed every three or four hours (a very necessary precaution in all such cases, in order to absorb all the matter as quickly as it is discharged). The sore was further washed in a strong solution of the milder caustic, which article, in the powdered state, was also sprinkled occasionally on the face of the slippery elm poultice. After the sloughing of the first eschar, whatever portions of the diseased mass remained were retouched with the stronger caustic, until the whole face of the sore assumed a healthy aspect. It was then regularly dressed as before stated. In the course of a few weeks it all healed up soundly. Four years have since passed without any recurrence of the disease.

The other case was a much milder one—"encanthis benigna"—and easily yielded to a similar treatment. This is a case in which the caustic potash can not be dispensed with.

HORDEOLUM,

Which means a "little barley-corn," is the name given to what is called in the vernacular a *sty*, and may be briefly defined as a small *inflamed* tumor on the eyelid. It appears to be simply a modification, from the confined situation, of what would elsewhere become a boil.

The STY, or boil on the eyelid, increases but slowly in size, and although it finally suppurates, shows little or *no* tendency to spontaneous *opening.*

It may remain a long time stationary as a little yellow-topped pimple. If not interfered with it may be eventually absorbed, or changed into a hard indolent tumor, sometimes called grando or chalazion.

The proper TREATMENT is to discuss this species of "phlegmon" as soon as it makes its appearance. This object may generally be effected by an active emetic, followed by a cathartic and diaphoretics. Cold and other local discutients may aid.

If it persist and increase in size, substitute emollients and *promote suppuration* as fast as possible.

When it is soft and has matter already formed, puncture and let it out. Any simple application is then all that is needed.

Should it degenerate into or leave behind it a

GRANDO OR INDURATED STY,

The puncturing may first be tried on this also. If after some discharge it appear merely indolent in character, apply stimulants, such as the com. tinct. of myrrh (Form No. 15). A few applications of this article will often be all that is needed. If these means are not sufficient, let the tumor be slightly touched with the pencil of caustic potash; after which it will come off in the poultice, and the part readily heal.

Other

TUMORS ON THE EYELIDS

May be *removed* in a similar manner. With the vinegar at hand, or previously applied with the slippery elm, the eye may be guarded from all danger; and the caustic potash become a substitute for the knife. Occasionally, however, in the case of a mere *fatty* tumor, simple excision is doubtless preferable. (See Part II).

THE EYELIDS.

Are liable to be involved in various affections of the eye, as has been incidentally noticed while speaking of ophthalmia. What is called Blepharoptosis, is a falling of the upper lid, or rather inability to raise it, from spasm of the orbicularis or paralysis of the levator muscle, independently of any disease of the eye.

For obliterated Pupil, the varieties of Cataract, Entropion, Ectropion, Strabismus, etc.

With other affections or accidents of the eye, requiring operations, see the SECOND PART.

LECTURE XXVIII.

AFFECTIONS OF THE MOUTH AND THROAT.

AFFECTIONS OF THE TEETH.—Necessity for studying—Serious disease caused by "bad teeth"—Cases—Crowded teeth—Caries—TOOTHACHE, neuralgic, rheumatic and from decay—Palliatives and radical cure for the latter—Cleanliness.

EXTRACTION OF TEETH.—Forceps—the dentist's *kit* unnecessary—The new *molar forceps*, with two other pair, all-sufficient—directions for using—hæmorrhage—superfine elm *flour*.

EPULIS, or tumor of the gums—neglected beginning and destructive progress—early and later medical treatment—operation—RANULA, and other tumors or obstructions—incision or abscision, and after treatment.

TONSILLITIS, ETC.—Active measures for acute inflammation.—Direction for lancing and for superceding that operation—CHRONIC ENLARGEMENT—excision—its danger.

CHOKING—symptoms and effects of the accident—pushing *down* or pulling *up* the obstructing substance?—Various means and methods.

AFFECTIONS OF THE TEETH.

I SHALL not, at this time, attempt to go into this too much neglected subject, with the minuteness of detail that properly belongs to Dental Surgery. As, however, professed Dentists are not always to be found, except in cities and towns of considerable size, it is absolutely necessary for the *general practitioner of medicine* to understand and practice more or less of *dentistry*. So far as the mechanical part of the business is concerned, with the exception of simple tooth-drawing, I shall leave you to obtain your knowledge from the excellent works on Dental Surgery, which have been published within a few years past. But the *physiology* and *pathology* of the teeth have a much greater claim on your attention. As surgeons, and even as physicians, you are bound to study these subjects. The advantages of a good set of teeth, and of a good *use* of them, in mastication, are little appreciated, and still less are all the *disadvantages* of diseased or decayed teeth.

You must understand, then, that the local pain and inconvenience of bad teeth are not alone the matters worthy of consideration in this connection; but that, in a great variety of serious affections, the future health, nay, the very life of the patient, may depend entirely on the removal of the decayed teeth. So long as this prolific source of general and local disease remains in the mouth, all your efforts at a removal of other affections will often prove abortive.

Numerous diseases affecting the general system may be traced directly to diseased teeth or gums as their exciting and sustaining CAUSE. Neuralgia, ulceration of the tonsils, tumors or ulcers on the tongue, often becoming malignant, violent and continued headache, with glandular swellings in the throat, proceeding in some cases to ulceration, not unfrequently arise entirely from this source. Serious and intractable disease of the stomach, with general disorder from imperfect digestion, is a still more frequent and less suspected result.

I have been not unfrequently called to patients, during the last five years, who were laboring under chronic diseases of various forms, for which they had been treated by Old School men, Homœpathics and Eclectics, in turn, for years, but without receiving any material benefit—the ill success owing entirely, I have no doubt, to the failure to recognize and remove the *dental* cause. On examining the mouths of such patients, I have found, in some instances, not more than one or two diseased teeth, but in others, five or six, and perhaps half a dozen or more old rotten snags or roots of teeth, which had long since become insensible and ceased to attract attention. Around these teeth and snags was collected a gluey substance, which, if brought in close proximity to the olfactories, would impart the most horridly sickening and putrescent smell imaginable. The gums all around were swollen, inflamed, and more or less ulcerated. Yet of this condition the patients did not complain, nor had any of their medical attendants inquired about it. *My first prescription* in these cases was "*a dentist*"—utterly refusing to make any other prescription until *all* the diseased teeth and fangs were removed, and the mouth and gums cleansed.

In numerous cases, where the patient and friends had abandoned all hope of recovery, this dental operation, and cleansing of the mouth—the removal of this accumulated filth in the highway to the stomach—has been followed by a rapid restoration of general health, without the aid of any other means than perhaps bathing and gentle tonics. I might mention scores of cases.

One young lady of this city had been for two or three years declining—had been sent from home to consult an eminent Stethoscopist and Medical professor in relation to her case. He, in connection with his colleagues in the College, after several months' unsuccessful efforts for her relief, pronounced her case one of incurable disease of the heart. She was sent home, with a written request from her medical adviser, that her case be brought before the faculty of another old and celebrated Medical College. Their decision in the case confirmed the former diagnosis. Some weeks after this last consultation, I was requested by the parents of the patient to examine and give an opinion as to the probable *result*—they had no doubt of the correctness of the diagnosis which had been given. In the course of my inquiries, I naturally, in searching for the cause of her bad symptoms, looked into her mouth, when I found, what I had suspected, a number of diseased teeth and decayed fangs, in the condition I have before described. The services of a dentist were prescribed, and proved most effectual. After removing all the decayed teeth and fragments, the gums soon healed, and, with a little tonic treatment, all symptoms of *heart disease* disappeared, and her health became good.

A gentleman of this city had been afflicted for a long time with neuralgia and dyspepsia, with numerous other derangements—so that he had been, for months, unable to attend to business, and suffered much, at all times, from severe pains in different parts of his body and head. Though he had many decayed teeth, as they did not ache, he had never suspected that they were doing any harm. His physicians had never intimated anything about injury from his teeth; and when I informed him that they were the cause of all his sufferings, he could not be made to believe it, until I scraped off a portion of the matter from one of them, and induced him to smell and taste it, when the terrible nausea and *vomiting* produced by so small a portion, soon satisfied him. His cure was easily effected by a removal of the foul source of disease.

To proceed with the different dental diseases, I will first mention

Crowded Teeth. The irritation of the gums, caused by the teeth crowding too closely together, will often produce inflammation and ulceration, and if the latter be around the posterior teeth, it not unfrequently produces dangerous inflammation of the tonsils and pharynx. Crowded front teeth will also cause ulceration of the gums, and even the bone itself may not escape. Treatment is simple. Extract a tooth from the crowded space—remove the cause, and nature will generally repair the injury. If not, treat the ulcer as in other cases.

Carious Teeth is the term used to denote decay of the body of the teeth, while ulceratd teeth is applied to the disease of the fangs or roots. In the case of superficial caries, if the tooth has never, or but seldom ached, and is not now tender, the decayed portion may be removed by the proper dental operations, and the tooth *filled* and saved. But if it is painful and sore, or tender to the touch, by all means extract; for, even if it be cleaned and filled, it will most likely still ache; and if so, it is more than probable that there is disease at the roots, which will do more or less injury to the general health, besides constantly annoying the patient by the local pain, and endangering the jaw.

Toothache

Generally arises from decayed teeth, but it may be of a neuralgic or a rheumatic character. A sound tooth, or several sound teeth, may ache, while a diseased one is the source of all pain. This latter may not ache at all.

If the pain arise from neuralgia, and the teeth are sound, the neuralgic affection is to be treated and removed. This can generally be effected by applying strong stimulants, as mustard, to the back of the neck and head, so as to cover the mastoid processes, and continuing it as long as the patient can endure it. Cupping and scarifying the same surface will generally relieve. I have often relieved the most severe cases of acute neuralgia faciei (involving "toothache"), by applying large dry cups just below and behind the mastoid processes, following up with mustard, frequently repeated for a day or two. If the neuralgia be chronic, it can be cured by the irritating plaster (applied in the same place, and continued for a long time), with the proper constitutional alteratives.

Extract of tobacco, in solution as thick as thin molasses, applied along the course of the jaw, will often arrest neuralgic toothache. This may be used with good effect in connection with the mustard or cups to the neck and head. Emetics, in connection with the local means, will produce effectual relief. But it is more particularly in the.

RHEUMATIC TOOTHACHE, or that kind which generally results from a sudden cold, and in which the pain is not only in several teeth, sound as well as decayed, but seems also to be in the bones, constituting "face-ache," that *Emetics* are the most valuable.

In such a case, warm pediluvia and diaphoretics, followed by, or in connection with, a thorough emetic, will give prompt relief. The alcoholic vapor may be used as the sudorific means [See INTRODUCTION and RHEUMATISM.] Where the pain is in sound teeth, and you find one or more in a state of decay, extract *the latter*, whether they ache or not, and you will probably cure all the "aches."

If a decayed tooth aches, your course is plain—take it out. If, however, the patient has not fortitude to submit to the operation, you *may* be able to find

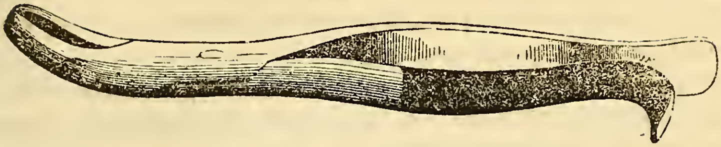
A CURE for the TOOTHACHE without extraction. Sometimes cold, at others warm applications, answer this purpose *best*. Strong stimulants, as oil of cloves, cinnamon, etc., will do—Creasote will generally arrest the pain—but this is a dangerous remedy, and if used at all, it should be with great caution, as a very small portion getting into the stomach will produce dangerous inflammation. I have often prescribed a combination of equal parts of pulverized camphor and opium—made into a thick paste by wetting them with oil of turpentine. Fill the cavities of decayed teeth with this. It will in nearly all cases give immediate relief, and in many so effectually destroy the sensibility, that the teeth decay entirely away without ever aching afterward. But no well-informed surgeon will ever advise the retention of decayed teeth, however free from pain they may be, or however confident he may be of having a certain remedy for toothache. Nor should country practitioners ever be without the means at hand for the only *safe* and radical cure—EXTRACTION. The necessary description of instruments and instructions for this *important* part of surgery, I will give in this connection, instead of reserving for the Operative Part of the Course.

Before doing this, however, I would enjoin upon you to direct all your patients, whose teeth or gums are unsound or unhealthy, to keep them perfectly *clean*. Direct them to wash the teeth thoroughly with cold water, inside and out, every morning and after each meal. Apply the water with a tooth brush, rubbing the teeth and gums briskly—and after the washing apply finely pulverized charcoal, by dipping the wet brush in the powder and rubbing it on, inside and out. All bits of meat or other food should be removed from between the teeth, by a tooth-pick, immediately after each meal. After thus cleansing the teeth and mouth, let the best of all mouth-washes, the *saliva*, be freely applied, by rubbing the teeth with a dry brush, which will excite a sufficient flow of that fluid to *re-dissolve* the tartar, and remove *it* better than any other dentrifice can do.

Extraction of Teeth.

The only proper INSTRUMENTS for this often indispensable operation are forceps. Formerly, the *turnkey* was in use, by nearly all, for the back teeth; but as dentistry became generally recognized as a distinct profession, this cruel and clumsy agent was laid aside, and intelligent force substituted for mechanical. Dentists have many differently constructed forceps for the different teeth—at least six or eight pairs. There may be four for the molars—a special pair for the upper, and another for the lower, on each side, and perhaps even separate ones for the last molars; different ones for the upper and lower incisors; one pair each for the cuspids and bi-cuspids, and several for taking out fangs—amounting, for a full set, to ten or fourteen pairs of forceps. This formidable array of instruments may do very well for the dentist, though even his efficiency will depend much more on his skill than his tools, but is altogether out of the question with the country practitioner, who must have his tools at hand, being liable to be called on to use them when miles from his office. Seeing and feeling this inconvenience when practicing in the country several years ago (and having before experienced, in my own person, enough of the bruising and mangling by the turnkey) I invented

FIG. 14.



the simple MOLAR FORCEPS, (Fig. No. 14.) These are a perfect substitute for all the four, five or six pairs, kept for the same purpose by the dentists. With these *any molar* tooth on either side of either jaw, as well as the bi-cuspids or any other tooth that is out of the reach of the straight incisor forceps, can be readily extracted. With these and the common INCISOR FORCEPS, (Fig. No. 15) any tooth can be drawn with as much ease, and as little pain to the patient, as with any of the dentist's kit. For the extraction of parts of teeth and fangs, small sharp POINTED CURVED FORCEPS are used (Fig. No. 16). With these three pairs, nearly every tooth or portion of tooth may be extracted.

FIG. 15.

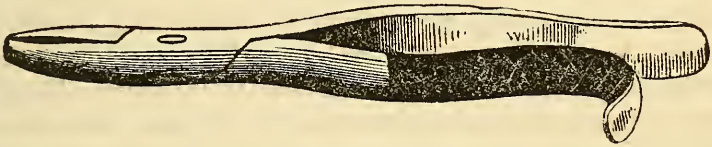
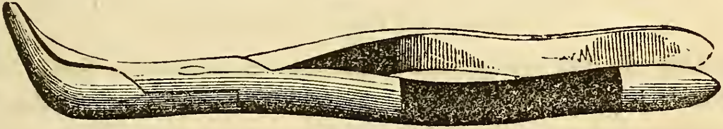


FIG. 16.



Before EXTRACTING A TOOTH you should separate the gums completely from its surface down to the bone, inside and out as well as between it and the adjoining ones. Then seize the tooth with the forceps, pressing the blades firmly down to the alveolus, and by steady force in the most direct line of the fangs, with slight lateral motions to loosen them, draw it out. In extracting INCISOR TEETH, circular motion should be made with the traction. The incisor forceps can be applied to the cuspids, in most cases, as well as to the incisors. For the extraction of fangs after detaching the gums, using the fang forceps (Fig. No. 16), press the sharp points as far down at each side of the "snag" as possible, seize and rotate it a little, when it will generally come out easily.

Troublesome *hemorrhage* sometimes, though rarely, follows the extraction of teeth. I have had some very severe cases. The application of common salt to the bleeding surface will usually arrest the flow: even cold water will be sufficient. But some cases will resist these means, and the blood pours out profusely. I have always been able to arrest the hemorrhage, even in the worst cases, by filling the alveoli with *superfine powder* of the Ulmus fulva. (For this purpose it is necessary to have that which is made of the pure *bark*, having not a particle of woody fiber in it). This forms a coagulum with the blood that completely clogs the mouths of the bleeding vessels, and adheres to the surface with such tenacity as not to be washed off by the flow of blood, or soaked loose by the saliva. The flesh side of oak tanned sole-leather, grated off finely and crowded into the cavity, has been used with success. This leather dust may be wet with some astringents or styptic, as tr. of kino, catechu or galls, or the oil of Erigeron canadense. The oil of turpentine, also, is very efficient in suppressing hemorrhage of this character. But I have never seen any article used that would arrest the hemorrhage so promptly and permanently as the ELM FLOUR.

TUBERCLE OF THE GUMS—EPULIS.

This disease occasionally assumes a *malignant* form, and *extends* rapidly from its original seat to the adjacent parts. If not arrested early it will be very likely to prove fatal.

However trifling *Tumors* upon the *Gums* may at first appear, to those unacquainted with their occasional malignant termination, the well-informed surgeon will always urge the propriety of early attention to them.

EPULIS generally appears on the gums of the *incisor* teeth, above or below. While the teeth are perfectly sound, and before any appearance of the tumor, they will sometimes be loosened and protruded beyond their fellows. Commonly, however, a small seed-like tumor is seen on the gums, partly between the teeth. This may remain, for several months, nearly stationary, growing so slowly and being so free from pain and irritation as to attract no notice. Finally it loses its hardness, grows more rapidly, becomes very soft, and bleeds on the slightest touch — on its surface becoming accidentally abraded, fungus spreads out with prolific growth.

From this time it *continues* to involve the gums, displacing the teeth, and affecting the glands and other soft parts of the mouth in rapid succession, until the patient is destroyed by the irritation and hæmorrhage.

To TREAT this successfully, the proper measures should be adopted early. After it has extended to the lymphatics and the cellular portions of the ethmoid bones, the tongue and palate, palliatives only are of any service.

All the TEETH near the affected gum should be immediately *extracted;* and the *tumor* cut down to its base, with caustic potash, applying it to every portion of the diseased structure, so as to effectually disorganize and cause it to slough off. For this purpose, let all the surrounding parts, as the lip, tongue, etc., be protected from the action of the caustic by means of cotton wet in vinegar, rolled up and pressed in around the portion to be cauterized, and kept there until the operation is completed, and the cauterized surface also wet in vinegar. Having done this, cover the eschar with a pledget of lint; wash out the surface freely two or three times a day with a strong solution of the sesqui-carbonate of potash; and cover the surface, as soon as the sloughing has taken place, with the dry powder of the last named caustic once a day, or oftener if there is any tendency to fungus growths, placing the dry powdered Elm bark on the caustic, and covering the whole with a thin layer of raw cotton. If there be a free discharge of pus, change the dressings and wash off with soapsuds, or a solution of the mild caustic, three times a day, or oftener if necessary. After two or three weeks, the solution of caustic applied twice a day will be sufficient—it will heal kindly. In all cases strict attention must be paid to the *general treatment*—daily bathing should be enjoined—cathartics should be used every four or five days, with Scrofulous or Alterative Syrup—and gentle aperients are not to be neglected whenever indicated. In the early stage, while the disease is confined to the gums alone, or even has extended no further in the bone than the base of the alveoli, this course of treatment will be effectual in every case where the constitutional health of the patient is not very bad. It will succeed in any case where an *operation* would offer the remotest chance of a cure. And even when the disease is so extensive as to be beyond the reach of any operation not certainly fatal, very great hopes may be entertained under a careful and persevering application of the remedies here directed.

[In my opinion, the only certain method of treatment is excision of the entire part diseased, inclusive of the alveolar process, and more or less of the maxillary bone. Bring the patient fully under the influence of chloroform, and extract the teeth: then with the bone forceps, or strong cutting pliers, excise the epulis, alveolar process and all. If the bone is much diseased, a Heg's saw may be employed at the sides, and the diseased bone then removed with the gauge forceps. After the operation, which should be thorough, the wound is treated as any other.]

RANULA.

This disease consists of a small tumor situated under the tongue, caused by some obstruction to one or more of the Whartonian or Ravinian ducts. The fluid secreted by the sub-maxillary or sub-lingual glands accumulates at the point of obstruction, forming a tumor which becomes inflamed and painful, and if not opened will ulcerate and prove quite troublesome.

The best TREATMENT for these tumors is to cut through their surface with the points of sharp *scissors*, and take out a small portion of their *substance*. Then wash out the cavity with soapsuds, or a solution of super-carbonate of potash; or if it remain obstinate, after a few days introduce a small portion of the sesqui-carbonate. This will soon effect a cure.

[My treatment for ranula is to pass a stout needle, armed with surgeon's silk, through the tumor, reaching say half an inch, tying it tightly and allowing it to cut through. The treatment is speedy and very effective.]

OTHER TUMORS, of a similar character, sometimes make their appearance on the mucous membrane of the mouth. These are caused by the obstruction to some of the salivary ducts, and should be treated in the same manner.

DISEASE OF THE TONSILS.

TONSILLITIS, or acute inflammation of the tonsil glands, is not an unfrequent disease. It is known by rapid swelling, great pain in the parts, difficult respiration and deglutition, and more or less acceleration of the pulse, with general symptomatic fever. The skin is generally dry and the bowels costive, with dull headache. *Active* TREATMENT is required to subdue the inflammation and prevent suffocation, which, in some cases, is liable to occur before abscess and suppuration will take place, which affords spontaneous relief.

Means should be used as soon as possible to bring about an equilibrium in the circulation and excitability of the system, and produce general relaxation and perspiration. For this purpose, place the patient's feet and *hands** in water as hot as he can bear—bathe the whole surface in the alkaline wash, with the addition of brandy or whisky. Give small doses of the acetous emetic (Form No. 4), in some warm sweetened water, repeated at intervals of fifteen or twenty minutes, so as to keep up a constant nauseating effect without vomiting, for several hours in succession, carrying it afterward to the extent of free vomiting. At the same time apply to the external surface of the throat strong stimulants, such as a mixture of Linseed oil, 1 ounce; Oil of capsicum, 1 drachm; Spts. Camphor, 2 drachms; Oil Turpentine, 3 drachms. Over this apply flannel cloths wrung out of a strong solution of salt and vinegar, as hot as they can be borne.

Gargles are useful—the best of which is the *acetous emetic*.

Others may be used, such, for example, as borax and hydrastis, in strong infusion.

An active cathartic should be given as soon as you leave off the emetic. If these means are properly carried out in the beginning, they will arrest the disease. The perspiration should be kept up for a long time, or until the inflammation subsides. The alcoholic vapor bath may often be used with advantage.

If, however, the case has been of long standing and rather slow in its progress, the glands may have become much indurated, and even abscess may have formed before you are called, or the inflammation may have proceeded so far as to terminate in abscess in spite of your treatment. If then it remain obstinate, the swelling continuing to increase, or remain stationary, *puncture* the glands. This can be done with a narrow, straight-pointed bistoury, or a small scalpel. The blade should be wrapped so as to cover the edge to within an inch of the point. Hold the tongue down, and carry the point forward to the front of the gland, with the edge looking inward: push it forward so as to cut its way out toward the median line. If there be pus in the gland it will pass off, and much immediate relief will follow. But if not, the blood will flow freely for a few moments, and even this flow will lessen the tumor and afford great relief. A continuance of the other measures will then complete the cure.

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* Placing the *hands* in hot water as a revulsive measure, as well as the feet, is rarely practiced, and I suspect the value of the measure is little known. I am quite sure that no one who has ever tried it, in a case requiring strong measures for the restoration of the circulation to the surface and the extremities, would ever fail to use it in all such cases.

During the prevalence of cholera last year, I resorted to this *hot* hand bath with the happiest effects—bringing on free perspiration in a much shorter time, through its aid, than with the hot pediluvium alone. The hands and arms should be immersed to the elbows.

Chronic Enlargement

Of the Tonsils frequently occurs after repeated acute attacks, especially in scrofulous persons. This is a source of much inconvenience, if not danger.

The patient is liable to frequent inflammation of the parts—the voice is changed and rendered hoarse—deglutition is obstructed, and respiration often rendered difficult and noisy, especially during sleep. Much deafness is occasionally caused by the enlarged gland obstructing the eustachian tubes. And, it is said, suffocation has occurred from viscid mucus collecting between the enlarged glands.

The TREATMENT must have reference to the whole system as well as the local difficulty. The general surface must be strictly attended to, the proper bathing and frictions used night and morning. These may be alkaline at night, and acid or simple cold water in the morning. Any derangement of the liver and digestive functions should be regulated by the proper means, such as occasional cathartics, aperients and tonics.

The acetous emetic should be used once every four or five days, for two or three weeks, and afterward at longer intervals if the disease remain. Use a gargle composed of the following articles: Statice limonum (Marsh rosemary), Sanguinaria, of each half an ounce; Piper nigrum, two drachms; Iris versicolor, two drachms; common Salt, three drachms; add a pint and a half of boiling water, simmer it slowly down to one pint, and strain. Apply this to the surface of the tonsils freely, night and morning. It may be applied by means of a swab.

During this time apply at noon to the glands the dry powder of the sesqui-carbonate of potash with a camel's hair pencil moistened, and covered with the powder. It should be applied freely—no danger need be apprehended from any of the caustic getting into the throat, as it will do no harm if swallowed.

These are all the local measures that are necessary in many cases, but to make the cure *certain*, I apply, in addition, the Irritating plaster on the throat, to extend from ear to ear, and keep up with it a purulent discharge from the surface as long as the patient can be induced to bear it. Several weeks may be necessary, and a reapplication is sometimes required. After removing it from the throat it should be applied on each arm, just below the insertion of the deltoid muscle, and continued there for a long time.

Of all the local measures for the relief of obstinate chronic diseases, I know of none that is of one-tenth part the value of this plaster. It doubtless produces its beneficial effects as much, if not far more, from its virtues being absorbed, and thus acting as a general alterative, than from the local irritation and purulent discharge produced. I have never failed of curing a case of diseased tonsils where the patient followed out this course of treatment faithfully.

Many persons are unwilling to submit to the trouble and expense of this course of treatment, and choose to have the diseased gland taken out. This is easily and safely accomplished (so far as the *operation* is concerned) by the instruments, and in the manner described in Part Second of these Lectures.

Many physicians, whose opinions are worthy of great respect, believe that the excision of the tonsils is very dangerous to the future health of the patient, predisposing to pulmonary disease. Though I have never observed such effects, these hints should not be overlooked.

Foreign Bodies in the Œsophagus (Choking.)

A substance lodged in the œsophagus generally stops at the narrowest or most confined place, which is opposite or just above the cricoid cartilage. It is not, however, likely to remain there long, as by the efforts of the patient or others, it is generally pushed further down, and remains at some point above the stomach. It is, however, sometimes raised a little, and sticks fast in the pharynx, opposite the larynx.

The substance may produce so much *irritation* as to cause spasm of the glottis and immediate suffocation. But more generally nothing more than irritation, with difficult or impossible *deglutition* occurs, until a sufficient time has elapsed for inflammation to be induced. The inflammation will soon advance to suppuration or ulceration, and prove very destructive and dangerous to life. Or, if the substance be very large, it may peril life by the direct pressure upon the glottis or trachea. It often happens that a foreign body lodged for a time, at last slips down into the stomach spontaneously, leaving for awhile a tumor behind it, at the point of lodgment.

The TREATMENT for this case is to *extract* the article, if possible; or if it be a substance the presence of which in the stomach would do no harm, being digestible or soluble, to *push* it down. First seat the patient, throw the head far back and open the mouth widely. Then pass your finger into the pharynx, regardless of the gagging or efforts of the patient to vomit, and as quickly as possible search at every point for the substance. If felt, endeavor to take it away with the *fingers*, by attaching it to the nail. But if you fail in this, immediately introduce *curved forceps* (such as every one should have in a pocket case) along side of the finger, using the finger as a guide. If the object can be seen, of course the forceps alone are sufficient.

If, however, the substance has passed *below the pharynx*, and the patient can still swallow, give an emetic. If not, put a quantity of liquid emetic into the mouth and make him hold it there for a few minutes. This will often excite *vomiting*. If that fail, administer a warm enema of the common emetic. Give four or five ounces at a time, repeated every fifteen minutes until he vomits. If this fail to nauseate sufficiently, use the *comp. tr. of Lobelia*. But all these means may fail. If the substance be proper for the stomach *push it down*. This may be done with a *Probang*—a piece of whalebone, with the end rounded and covered with silk to make it smooth. But if this passes by the substance without moving it up or down, attach firmly to the end of your whalebone a piece of very fine sponge, perfectly dry, having its surface lubricated with oil or soap, which will make it still smoother. It must not be so large as to produce suffocation by pressing on the trachea. Pass this down to the substance and press gently upon it. If it moves the substance before it, continue until it enters the stomach, and then carefully withdraw your instrument. But if the instrument, with the sponge attached, *passes by* the article, push it on a few inches *further*, and let it *remain* for several minutes. It may even be passed down into the stomach, where, by absorbing fluid, it will become swollen so as to fill up the œsophagus, and when withdrawn, bring up the substance before it. Another plan is to fix threads to the whalebone, with a great number of loops hanging from its end, and along its surface; pass it down beyond the obstruction, and the substance becoming entangled in the loops may be brought up with it.

If it be some substance which would not be digested or dissolved, and too large to pass through the pylorus and be discharged from the bowels, every effort must be made to bring it up. The œsophagus forceps (made for the purpose) must be used, if emetics fail. Or a tube connected with an air pump, or a common stomach pump, may be passed down on to the obstructing substance—when, by exhausting the atmosphere above, it would attach to the end of the tube and be withdrawn with it. If the substance fill the passage completely, the œsophagus forceps could not be passed down by, so as to grasp it, and in the attempt to do so, there would be danger of pushing it into the stomach. Hence the resort to the pump is the best plan. One case is named, where a fish-hook, with a line attached, was fast low down in the œsophagus. A hole was drilled through a bullet, and that let down the throat over the line, when coming in contact with the hook, the latter was disengaged by its weight, and the point then turning up against the leaden ball, was prevented from catching hold again, as both were drown out together.

If the obstruction is in the cervical portion of the œsophagus, and can not be otherwise extracted, it may possibly be removed by the operation of Œsophagotomy.

LECTURE XXIX.

GOITER or hypertrophy of the THYROID GLAND, where endemic, persons liable—Relation to scrofula—Progress and results—Iodine not to be depended on—Other popular means, excision, ligature, etc.—The means and time requisite for a RADICAL CURE.

INFLAMMATION of the MAMMARY GLAND—Cause, symptoms and serious consequences—Various stages with appropriate local treatment, peculiar applications for preventing suppuration—Constitutional treatment—Lancing to be generally deferred—Special precautions in puncturing, consequences of their common neglect, contingencies and measures after opening.

BRONCHOCELE OR GOITER.

THIS disease consists in a preternaturally enlarged thyroid gland. It prevails very extensively in the *valleys* of Switzerland and other mountainous parts of Europe. It is found in the United States, everywhere, but more frequently in low districts and near the great lakes, where the atmosphere is moist and the soil rich. Individuals of all ages and of both sexes are subject to this disease, but females are by far the most frequently affected with it. It rarely occurs in children before the tenth year, nor is it likely to commence in very old persons. Persons of light fair skin, of relaxed constitutions, light hair, large light eyes and precocious intellects, in short, of the scrofulous habit, are most likely to have goiter. The memory of the child is often very vigorous, and the whole mind in point of development several years ahead of its age. But when Goiter appears, a sudden change very frequently comes over the mind. Often in bad cases, as the disease progresses, the countenance becomes more pallid, and changes from the brilliant intellectual appearance to a dull unmeaning aspect: the eyes loose their luster and assume a vacant look. Intellectual development seems to be nearly arrested. If it become very large, respiration is more or less obstructed and difficult: the voice changes, and articulation is indistinct.

The intermarriage of persons affected with goiter, is likely to result in the production of the disease in their offspring.

Usually, the goiter diminishes in cold dry weather, but on the return of warm, moist weather it enlarges. In some countries it effects horses, cattle, dogs and sheep.

It begins by a small tumor on one or both sides of the trachea. It may occupy both lobes and the isthmus of the gland, so as to have the appearance of a uniform tumor, or be only on one side, or on both, the isthmus remaining unaffected, dividing the two lobes by a deep fissure. It sometimes extends back on both sides so uniformly as not to have the appearance of a distinct tumor. It is usually slow in its *progress*. In most cases, it is soft and insensible, and may be handled with impunity; in others, it is closely bound down by the muscles, and feels firm and hard. If it becomes inflamed, it is extremely painful, and presents very troublesome symptoms, which are often quite difficult to subdue.

Although this disease is more apt to occur in persons of the habit of body called scrofulous, there is no immediate or necessary connection between the two diseases. In *scrofula,* the lymphatic glands are involved. This is not necessarily the case in *goiter*, which is a local disease. Scrofula is a general disease. Scrofulous persons may have goiter, but scrofula does not necessarily generate the enlargement of the thyroid gland. The scrofulous tumor is in general much harder and more tender to the touch than goiter.

In this country, severe or dangerous cases are very rare. The principal difficulty attending them, in a very large proportion of cases, is the *deformity.* The striking effects upon the mental constitution, before referred to, are, among us, still more rare. Various modes of

TREATMENT have been recommended and pursued, all of which have had their strong advocates, and most of which have been abandoned, either as useless or too dangerous. IODINE seems, from the numerous authorities, to stand higher than any other remedy. It is mostly used internally, in the form of Iodide of Potassium, and of iron. It is also applied externally, in the form of an ointment, with lard, or some other convenient vehicle, rubbed on once or twice a day, over the tumor. It is also dissolved in alcohol, and applied as a wash. Extract of *Cicuta* is highly recommended by Prof. Gibson, while he has by no means the same confidence in iodine that is expressed by others. Of this favorite article he thus speaks: "The reports of Coindet in favor of this medicine" (Iodine) "were soon fully confirmed by many other Continental Surgeons; and its reputation rose speedily to the highest pitch; strange as it may seem, however, its decline has been almost as rapid as its rise, being now considered in the estimation of many practitioners, nearly inert, and by others pronounced a most virulent poison. But, from all the statements made on the subject, we have, I think, fairly a right to infer that it is a medicine of great power, calculated, in some cases, to produce a very strong impression on goitrous and other tumors, as many well attested cases decidedly show; and that, on the other hand, it is followed occasionally with tremendous symptoms and even death. Again, it is equally certain that, upon other patients, not the slightest impression has been made by its use, either upon the tumor or upon the constitutions of the individuals who have taken it, sometimes for months together, and in the largest doses. My own experience in its use is very limited, but, judging from this, and from the reports made to me concerning it by my colleagues, in the Philadelphia Hospital, I should feel inclined to doubt its efficacy. Still it is possible we may have been deceived, either by the bad quality of the medicine or by other circumstances. Lastly, it may be stated that Dr. Coindet himself has abandoned the *internal* use of the remedy, and merely employs it in the form of inunction, from which he states that he has derived very beneficial results."

Inasmuch as, for years past, I have looked upon this medicine as not only useless in many cases, but as very injurious in all, I have thought proper to introduce this long quotation from so respectable an authority as Prof. Gibson, who, it will be noticed, is sustained in his views by the experience of other eminent medical men of the University of Pennsylvania. I have often observed that patients, after commencing the use of iodine, either externally or internally, soon began to decline in health; and though in many cases, the tumor would subside considerably, and occasionally altogether, it would, in a great majority of instances, soon reappear on a discontinuance of the medicine, and grow much more rapidly than before. I have known persons rendered permanent invalids—confirmed dyspeptics—by the use of iodine taken for goiter, without the least impression being made on the tumor. Some cases, it is true, are radically cured by it, without any apparent injury; but these are mild cases, and I am very confident that all such will yield readily to other and perfectly safe remedies.

Not only so: I have cured cases and so have others to my knowledge, without iodine *or any* other dangerous remedy—cases which had resisted both the external and internal use of iodine, in various forms, administered for a long time.

COMPRESSION, FRICTION and STIMULANTS are recommended and mainly relied on by some. They are certainly valuable adjuvants to other proper treatment, and will sometimes succeed alone—oftener, I am sure than Iodine. The SETON has been used by some with good effect, but in the hands of others it has as often failed. If it is used, great care is necessary to avoid hæmorrhage and inflammation. It is a barbarous practice, to say the least, though often benficial even where a *cure* is not effected. EXTIRPATION has been practiced, and is yet occasionally recommended; but the records of the cases thus treated show so large a proportion of fatal results, compared to the favorable ones, that I would not recommend the operation. Respecting *this* operaton, Prof. Gibson remarks: "But I very much question the propriety of attempting the removal of the goitrous tumor in any case, inasmuch as I conceive that hemorrhage" (which often kills the patient immediately) "is less to be dreaded than the inflammation and irritation which follow the operation. Under ordinary circumstances, the tumor may attain a very large magnitude, without endangering the patient's life or producing much inconvenience; and if it should increase to such a degree as to render death inevitable, there is very little probability that the patient can be saved by so severe an operation as must necessarily be encountered.

LIGATING the thyroid ARTERIES is another plan that has its advocates. This may be done by a careful operator, and the supply for the growth be thus cut off, causing the tumor to diminish very much, and sometimes entirely disappear. This operation is by no means free from danger, but in a case threatening the life of the patient, where other proper means had failed, I would advise the operation.

FOR THE RADICAL CURE, when that is practicable, or for arresting the further growth when it is not, the course which has been the most successful is to give the patient a brisk purgative, composed of Podophyllum one part, and Cream of Tartar, two parts, enough to operate freely. For an adult in health, begin with fifteen grain doses of the mixture and repeat every hour until free purging and vomiting are induced, and there have been from six to ten operations. The podophyllin may be used in half grain doses, with half a drachm of Cream of Tartar given every two hours.

This *cathartic treatment* should be repeated as often as once a week, and the bowels kept in a soluble condition by the use of small portions of podophyllin in the interval. *Bathe* the whole surface at night in weak lye, and in the morning with cold water. Apply a strong stimulating liniment with as much compression as can be borne to the tumor. At each dressing let the tumor be showered with a small stream of cold water poured from a hight, and the surface rubbed dry, using brisk frictions with the hand of another person before applying the liniment and compression. An excellent liniment for the purpose is found in oil of turpentine, in which as much gum camphor as possible has been dissolved. Strong alkaline lotions may often be applied with good effect.

If the general health is not good, these means will do much to restore it. Tonics may be used, such as the Restorative Bitters (Form No. 7), or the Prinos verticillatus alone, or with the Liriodendron tulipifera. If he be scrofulous, the Stillingia or the Scrofulous Syrup should be given.

Under this treatment, if strictly attended to, patients will often recover entirely. If not, still another and a more powerful discutient may be applied to the tumor—the

Irritating Plaster. It should be kept on and dressed in a proper manner for five or six weeks, with as much compression as the patient can bear; and when removed and the surface healed, the showering, with the liniments and compression should be again resorted to. The constitutional measures, before described, are also to be continued. No fears need be entertained from the abrasion of the surface by the plaster; for if at any time it becomes too painful, the application of an elm poultice for a day will soothe it, and the sore can be readily healed, leaving no scar.

This application, with the other means here directed, has succeeded in some of the most severe and obstinate cases. It must be borne in mind that the cure will take *time*, and it not unfrequently happens that the surgeon has much trouble to induce the patient to persevere. In bad cases, it often takes four and even six months, though in some, a few weeks will suffice to effect a perfect cure. I have often derived much benefit from the application of Irritating Plasters to some distant point from the tumor, as on the arms, and keeping up a discharge for several weeks after removing the one from the neck. An experienced practitioner informs me that he has cured cases by applying the plaster to the arms alone, after many applications to the tumor had failed. It will sometimes be necessary to reapply the plaster several times.

MAMMARY ABSCESS.

Although this disease is most commonly met with in lying-in females, it is not exclusively confined to this class of persons. It occurs occasionally among other females, and even males are sometimes affected with troublesome mammary swellings. In the case of males, however, this affection rarely, if ever, requires any treatment. It will gradually subside of itself. When abscess forms immediately after delivery, it is usually the result of some mechanical injury, received at that time, or of a sudden cold. It rarely occurs, however, before the lapse of from four to six weeks after parturition.

The first SYMPTOMS are generally slight swelling in some part of the gland, with throbbing pain, which is soon succeeded by a severe chill, and followed by more or less general fever.

In some cases the *chill and fever* will appear before the patient has noticed any affection of the breast. There will be in this case much restlessness and irritability, and, if strict examination be made, a small hard tumor will be found, most generally *far back* toward the base of the gland, which is extremely tender to the touch, though it has not previously occasioned any sensation of pain.

If the inflammation and tumefaction begin on the top of the gland or near the nipple, it will be the first symptom to attract notice. Soon after the occurrence of the chill, the breast enlarges in all directions, and becomes highly inflamed and extremely painful, and so tender as not to bear the slightest touch. The secretion of milk may be entirely suppressed, but most generally it continues, though very much altered in its appearance, becoming often injurious and sickening to the child.

Suppuration, if not prevented, will usually take place in about ten days, rarely sooner; but sometimes, if it be allowed to take its course, several weeks elapse before pus is formed, during which time the patient's sufferings are indescribably great.

The matter when formed is not always in one cavity, but may be in distinct cysts. These abscesses are sometimes of the character of sinuous ulcers, having several openings with long pipes winding tortuously into the substance of the breast, from which fungus sometimes sprouts out, and in large masses. This kind of *ulcer* in the breast rarely heals spontaneously. If not arrested, it will sooner or later prove fatal, the constitution of the patient being undermined by the pain, irritation and discharge. Hectic sets in and she soon sinks.

The TREATMENT of these cases, though they are rarely of a malignant or dangerous character, is nevertheless of immense importance, particularly on account of the extreme suffering of the patient.

If you are called early, before the chill, or soon after, examine the breast critically to ascertain the exact condition of the swelling. If it be still confined to a small compass, you ought by no means to allow it to extend so as to involve other parts in the inflammation. Add to finely pulverized Gum Camphor* a little lard, just enough to make it adhere; spread this on a linen or cotton cloth, and apply all over the breast. Apply also to the tumor, if still circumscribed, finely pulverized common salt, wet with Oil of Turpentine, and the camphor plaster over it and the rest of the breast. This salt application will produce severe smarting, so that the patient may not be able to endure it. If she can for ten or twelve hours bear with the camphor on the other surface, it will be quite certain, with the proper constitutional remedies to discuss the inflammation. If she is unable to bear this, it must be removed and the camphor applied over the tumor as well as the other parts.

A lotion composed of vinegar, saturated with salt, to which capsicum enough is added to make it quite stimulating, has been found in many cases to relieve the pain in a few minutes, and when persevered with for five or six hours, to entirely remove the disease. It should be applied as hot as it can be borne, by flannel cloths wrung out and frequently changed.

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* To pulverize Gum Camphor, drop a little alcohol on the gum and triturate in a mortar. In this way it can be made as dry and fine as flour.

If the *swelling* has become *diffused* and the whole breast enlarged, the saline applications can not be borne on so large a surface, and need not be tried. In such case, use the camphor as before directed. Other local applications may be used instead of the camphor, or in connection with it. I have had better success in the *very early stage* with the camphor, than any other local remedy except the salt and turpentine, when it could be used.* It is nearly always successful.

I have, however, used with success in the more *advanced stage*, a poultice of the Lobelia herb in connection with the camphor, the breast being anointed with the camphorated lard, and this covered with a poultice, made of the green or finely pulverized dry leaves of Lobelia, wet in hot vinegar and water, and applied blood warm. This should be changed once in an hour or two. It will very generally give prompt and permanent relief. A poultice of poppy leaves has been highly recommended as an anodyne application ; and simply as such it is very good, but it has not much effect toward promoting resolution. Various other of the discutient applications are used and often with success—such as an ointment made of wild indigo (*Baptisia tinctoria*), the celandine ointment, hop fomentations, stramonium, etc,

But all these often fail, and the miserable patient is doomed to linger out the time required for the frequently slow process of the formation of abscess and external discharge. It not unfrequently happens that the practitioner—becoming wearied in his attempts to afford relief, and impatient of nature's slow movements, heroically takes the matter into his own hands—plunges a lancet deep into the gland in search for pus, which does not exist, or if there be any, the quantity is so small that the relief afforded by its discharge is by no means an adequate compensation for the mischief done by the operation. The subsequent history of many cases assuming a malignant character, proves that these errors are far more common than is generally supposed.

If the means I have mentioned or any others you may adopt fail, you ought not to be in a hurry about *opening* the breast. Remember that eight or ten days generally elapse before matter is formed; that it may be twice that time, and that any cutting *before* pus is formed, or even after, when it is deep seated, may do irreparable mischief.

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*The excellent effect of camphor in this case is doubtless owing, in a great degree, to its rapidily diminishing the secretion of milk, which is always very troublesome, and is often a source of much difficulty, greatly retarding the cure. Some patients will object to its being applied, from the well-known fact that it "dries up the milk."

But I am going to mention still another remedy, for discussing the inflammation and swelling, and of course *preventing* the necessity of any opening. I am aware that in prescribing this remedy, which I mentioned when on the subject of Lacerated Wounds [page 81], I subject myself to the ridicule of some medical men, and perhaps the disgust of others. But the moral force of the good or ill opinion of such men is of but little consequence. The remedy I refer to is a poultice of wheat bran wet with human urine. It should be applied about blood warm and changed once in five or six hours. For relieving the pain, and discussing the inflammation and swelling, this application is superior to any and all other means I have ever seen or heard of. I had often used it for other cases of severe inflammation with excellent effect. Its use in these cases was suggested to me, about six months since, by a practitioner who informed me that it had never failed him under the most discouraging circumstances. Since that time I have used it in every case, in several very bad ones, and in all with complete and prompt success.

In one case the whole breast was inflamed and enormously swollen, the pain excruciating, and the patient much exhausted from loss of sleep and suffering, the disease having existed over a week. In one hour after the application was made she became easy, and in less than twenty-four hours the inflammation had entirely subsided, and in two days all tumefaction disappeared; the cure was complete. Whatever others may think of this or similar prescriptions, whatever ideas of vulgarity or indecency they may attach to it, I am free to say that I prescribe it, and shall continue to do so, as long as it is certain to afford my patients relief from their exquisite suffering, and no better or equally as good remedy is known. As I have before remarked, I hold it to be the duty of the practitioner of the healing art to avail himself of every means which God has placed in his power for the relief of human suffering, and he who would shrink from prescribing or publishing such a remedy, from fear of being considered vulgar, from motives of delicacy, fear of remarks that others might make, or from *any* motives of *self-consideration*, does not deserve the name of an honorable *physician*. I can not find language to express my contempt for the medical "man" who would allow his patient to remain in the truly wretched condition of a woman with acute mammary inflammation, without resorting to *any* safe means of relief, whatever others might think of his prescriptions. The patient need not know what is being used; it is enough for her to know that she has been relieved, and her gratitude for that relief will be none the less if she afterward learns the means used. Nay, she will respect you the more, and so will all sensible persons, for having the moral courage to do your duty.

I have been all this time speaking of *local* treatment, except that in the beginning I just hinted at the importance of

CONSTITUTIONAL MEASURES. Immediately on discovering the inflammation, whether the chill has come on or not, and while you are carrying out your local measures, put the patient's feet in hot water, and bathe her whole surface in weak lye and spirits, as hot as it can be applied without scalding. Most cases are caused by the patient's over-eating and over-loading the stomach and bowels—therefore give her a mild but thorough *emetic*, and follow it by a brisk cathartic. If, however, she sweats freely after the emetic, continue the sweating for several hours by giving her freely of some simple pleasant infusion, as peppermint, spearmint or winter green, as hot as she can drink it. Give the *cathartic* after the lapse of eight or ten hours. When the cathartic has operated freely, if the disease continue, re-establish the diaphoresis by hot infusions or the *alcoholic vapor*, or both in connection, and continue it by the infusions. The common Sudorific Infusion (For. No. 20), answers an excellent purpose.

In a large majority of cases, these measures with the proper local applications will discuss the inflammation during the first twenty-four hours. If the disease continue longer, these measures may be repeated according to the judgment of the practitioner. Diaphoretics and bathing daily with lye, will be found highly beneficial.

But you may be called too late to prevent abscess—it may have already formed, and much matter have been collected; or this may occur under your treatment. In this case, use means to soothe the pain and promote suppuration and bring the matter to the surface. *Don't puncture too soon.* It is better to let the abscess alone, and allow it to open spontaneously, if practicable. The elm poultice should be applied. This will act much better in promoting suppuration if wet with the urine, inasmuch as it greatly diminishes the pain. Flaxseed poultice is very good, as it does not adhere so closely. The elm or flaxseed, wet with scalding milk, and applied quite warm, aids the suppuration. When the matter has collected in considerable quantities, it may be very slow in coming to the surface, and if its escape is long delayed, it may do much harm by being absorbed, producing hectic, and if the lungs are weak, it may seriously affect those organs. If the patient be feeble, scrofulous, or inclined to pulmonary disease; you ought not to wait long for the matter to make its way to the surface. It is much better, however, in all cases that will admit of delay, to allow it to come as near the surface that nothing but the skin will intervene—and *then open.* But in the cases just particularized this might not occur until fatal injury had been afflicted on the lungs. Examine and ascertain as nearly as possible the seat of the pus, and the point where it approaches nearest the surface. *Puncture* with an abscess lancet at the most depending point at which the pus can be conveniently reached. In puncturing, be *careful in all cases* to make the incision *parallel* with the course of *the lactiferous ducts.* Have the edge of the lancet look toward the point of the nipple. By this means you will avoid severing many, or perhaps any of the ducts. It will be recollected that the breast or mammary gland is made up of an immense number of little glands, each having a separate duct or tube leading from it, through which the milk secreted by the glandulæ is conducted toward the nipple, from which it escapes by a number of larger ducts. As these little tubes approach the nipple, they run in similar directions, all converging to the same point, the smaller ones uniting—thus lessening their number and increasing their size as they advance. Now, if the lancet be introduced parallel with the tubes, though some may be split, none need be entirely severed, so as to destroy their functions; but if, on the contrary, the lancet be plunged in *across* the ducts—that is, with the flat side toward the nipple, forty or *fifty*, or even *more*, may be cut through, and the cicatrix close them up completely. Thus, the outlet from several hundreds of the still smaller ducts beyond are entirely and forever closed. These glands remaining sound, will secrete milk, as usual, at the next period of pregnancy. There being no way for the milk to escape, it will accumulate along the ducts, between the glands and the obstruction, causing inflammation, abscess, and very generally *ulceration.*

This is the history of thousands of cases operated upon by physicians, or I ought to say *quacks*—whether they are graduates or not—who are too ignorant of anatomy, or too careless in their operations, to be trusted with a *cutting instrument.* Let any one inquire into the history, and examine the scars of those unfortunate patients who have been afflicted so strangely with *repeated* abscess and ulceration of the breast, and he will soon become convinced of the truth of my remarks. This kind of surgical disease is moreover particularly liable to take on a malignant character. [See under CANCER, page 255.]

After the escape of the pus, dress the part with the elm poultice as long as there is much discharge, and when it diminishes, with simple cerate. It will generally heal kindly if the constitutional health be properly attended to. But if it become indolent and heal slowly, *inject* soapsuds into the abscess two or three times a day, and if it does not then, in a few days, assume a healthy appearance and heal kindly, use a solution of the mild caustic (Sesqui-carb. of Potash), increasing the strength if necessary. If there be several *sinuses* discharging matter, inject them with the caustic, and insert tents armed with the powdered caustic; dress it in this manner once or twice a day, as can be borne, keeping on the elm poultice until the pipes are destroyed and the abscesses close. The caustic will effectually keep down all fungus.

In some instances, where it has been lanced too early, the *wound gapes* open widely, and the substance of the gland turns out like a rose, as large as a coffee-cup. In these cases, which are sometimes called "cancer," and often really become malignant, *if* long *neglected*, foment and poultice to subdue inflammation, and apply the mild caustic as in other cases. In one of the worst cases of the kind I ever saw, the leaves of the Pyrolia rotundifolia (canker lettuce) were applied in a green state, laid over the sore and changed once in two hours, effecting a perfect cure in the course of two weeks. I have used this article with like success in several similar cases, though none so bad. I prize it very highly, and wish to see its virtues further tested.

LECTURE XXX.

HERNIA OR RUPTURE.

DEFINITIONS and distinctions—Inguinal and Femoral Hernia, with illustrations—Irreducible Hernia, the sac and its neck — Omental and Intestinal Hernia—Strangulation, cause and symptoms, mortification and seeming relief — Directions for the Taxis — Original means for effecting reduction — Cupping and backing!—Superiority of cupping—Medicinal means—Operation to be avoided, the means and time for deciding on.

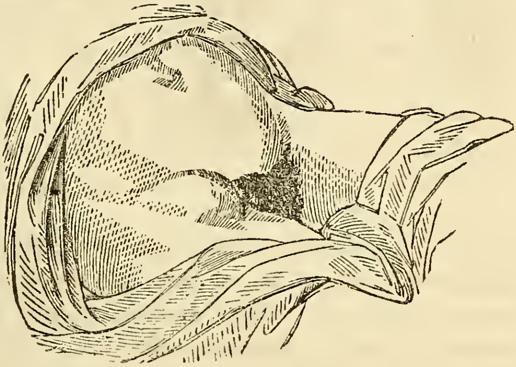
By the term HERNIA is commonly understood a protrusion of some portion of the intestines or omentum, or both, from the cavity of the abdomen, in the form of a *tumor* found to be suspended in a peculiar *sac* (which is a fold of the peritoneum carried on before the bowel and still inclosing it). The word RUPTURE, which is the popular synonym for hernia, more strictly expresses the *break* or *breach*, or widening of the opening, in the abdominal parietes, through which the viscus or viscera make their escape.

In some cases, as where the accident is caused by a wound dividing the peritoneum, or where the cæcum protrudes from behind the membrane, there will be *no* hernial *sac;* and other viscera than the intestines, as the bladder, ovaries, uterus, etc., may constitute the *tumor.* These rarer cases are still called "hernia." Indeed the most general definition of the word is the protrusion of any viscus from any of the natural cavities. This more extended meaning of the word is always indicated by the name of the particular case. Thus "hernia ventriculi" is a variety of ventral hernia, in which the stomach, instead of any lower portion of the alimentary tract, is protruded; "hernia vesicalis" involves the urinary bladder; and "hernia cerebri" means a swelling out of the brain and investing membrane at any point where the cranium is deficient, or has been removed. The greater liability of the bowels to this accident than other parts, arises as well from the great amount and variety of pressure to which they are subject, as the comparative weakness of the parts that cover them in front. The weakest parts are those at which the accident most frequently occurs; and anything that occasions general or local muscular debility, becomes a

Predisposing CAUSE: such as dropsy, pregnancy, abscesses, wounds, etc. The *exciting cause* is any sufficient pressure on the viscera, such as *straining* in evacuating the bowels or bladder, or in lifting heavy weights, or some other violent bodily exertion (especially during debility from sickness).

The parts most LIABLE to *be* protruded are, after the omentum, either some of the small intestines, or some part of the arch of the colon. The PLACE where the tumor manifests itself is, in ordinary cases, near the *navel* or the *groin*, running down, in the latter instance, either in front of the thigh or into the scrotum or labia. (See Figures 17 and 18.)

FIG. 17,

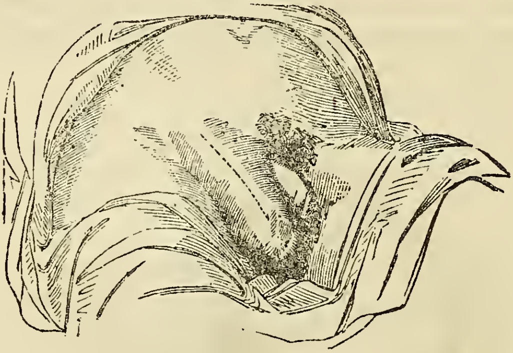


☛ The particular POINTS of protrusion give name to the most frequent cases; and the distinctions are sometimes vitally important. When the rupture is at the navel, the case is sometimes called "Exomphalos," more commonly and correctly "Umbilical Hernia." When at any other point of the abdomen than those I shall now go on more particularly to explain, it is simply "Ventral Hernia." [For these two varieties see next Lecture.] By far the most common points concerned, and most important for you to bear in mind, are the *Abdominal Rings* with their intervening *Canal* (for the passage of the spermatic cord), constituting INGUINAL HERNIA, of which several varieties are to be distinguished; and the *Crural Ring* and *Saphenic* or Lymphatic *Hole*, with the intervening *Femoral Sheath under* or *behind* Poupart's Ligament, giving rise to

Femoral Hernia. (See Fig. 17.) The amount of protrusion at this part is usually small, and the diagnosis from bubo and other affections of the groin is not always easy. It is more common in women than men.

In Inguinal Hernia, the intestine, after passing through the internal Abdominal Ring, may be arrested in the canal, and form a tumor there above Poupart's Ligament: this is "*Incomplete* Inguinal Hernia." "*Complete* Inguinal Hernia" is when the protruded part traverses the abdominal canal and emerges at the External Ring, following the same course that the testicle did in its passage from the abdomen into the scrotum. When the bowel runs on with, or rather, *within* the cord far enough down, it becomes "Scrotal Hernia" (Fig. 18). When a protrusion through the same points occurs in females, the tumor appears in the labia pudendi. This Complete Inguinal Hernia is sometimes called the "*Oblique*," in contradistinction to the case in which the bowel forces its way through the space between Poupart's and Gimbernat's Ligaments, leaving the External Ring and the Spermatic Cord on the outside of it. This is the "*Direct* or *Ventro-Inguinal* Hernia." This protrusion is not often very large, and may extend on toward the

Fig. 18.*



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* This cut represents inguinal hernia when it has not only become complete, but advanced so far as to occupy and distend the tunica vaginalis, then constituting it a case of "scrotal hernia." This, as well as the former illustration, represents the protrusions of a medium size and as they appear in a sitting posture. It will be noticed that the tumor on the thigh (Fig. 17) is much smaller than the pouch of Fig. 18. Its position is also above that of the other, though the other *commences* much higher up in the body. The dotted lines on the tumors indicate the direction of the incisions in operating for strangulation.

scrotum, but is unconnected with the Spermatic Cord or tunica vaginalis.

These distinctions of origin or location, are not the only or most important ones to be noticed. Every Hernia is either Reducible or Irreducible, that is, susceptible or not of being put back into its place. The distinction is not the merely relative one depending on the means used for actual reduction. All serious cases would thus be, for awhile, relatively "irreducible;" and when they are neglected, or efficient means are not resorted to in time to prevent such a result, they become absolutely and permanently *irreducible.* This is what is technically meant by the distinction. It is caused by *adhesions* of the sac and contents, or by an enlargement of the tumor from fatty deposits or other growth.

For the sake of beginners, I will observe that this subject of reducibility, is not, as it might seem to them, the most important practical question, and is not to be confounded with the subject of *strangulated hernia.* In simply irreducible hernia, the functions of the part go on, the same as if they were in their proper place. It is said to be strangulated when (from swelling of the neck of the sac, spasm of the muscular parts around it, distension by flatus or fæces, or from any similar cause) the sanguineous circulation through the part, or the passage of its proper contents is obstructed—rendering the death of the part, and almost necessarily also that of the patient inevitable, if the case is not speedily relieved. Strangulation occurs most frequently in cases of long-standing rupture; but is by no means to be regarded as a mere variety of "irreducible hernia." It is, of course, irreducible for the time and under the circumstances, and may have been permanently so before the distension or constriction; but many a fatal case of strangulation has been such as admitted of easy reduction, had the patient or the practitioner resorted to efficient means in time.

The *neck* of the SAC, of which mention was just made in describing strangulated hernia—the narrowest part where it immedately protrudes from the abdomen—necessarily contains a larger amount of the peritoneal membrane crowded and puckered up than the lower expanded part; and becomes thickened and condensed by pressure. Sometimes there are two necks, the sac having enlarged or descended further and drawn out more of the peritoneum, after one part had permanently grown into a neck at the fissure. In Complete or Direct Inguinal Hernia, there are always of necessity two necks, one at the Internal, the other at the External Ring. The body of the *sac* increases in size by distension and growth, as well as further drawing out from the abdomen. Adhesive inflammation, or adhesion without inflammation, soon forms with the surrounding parts, so that when the protruded intestines are replaced, the peritoneal protrusion or *sac* is very rarely returned with them.

It is well for the practitioner to DISTINGUISH between a protrusion of the omentum only, and one of intestine, or of both. The hernial tumor containing OMENTUM only (epiplocele), is insensible and inelastic, feeling to the touch *like dough.* When formed of INTESTINE (enterocele), it is *harder* as well as elastic, and gives *pain* on being pressed. If *both* are included in the sac (entero-epiplocele), you will find one part of it springy and sensitive, while another has the peculiar doughy insensibility.

The protrusion at either of the points mentioned is liable to become "strangulated," i. e., to have the orifice through which it has passed contracted upon it, so as to prevent its return and obstruct its circulation and other natural functions. This is a condition, which, if not relieved, must soon occasion death. Any cause of inflammation or spasmodic irritation, supervening on the simple hernia, may bring about this alarming complication.

The symptoms of STRANGULATED HERNIA are first an irritable condition of the parts, with a hectic flush over their surface, and pain at the point of protrusion and constriction. When inflammation is not itself the cause, it soon follows on strangulation. The pulse becomes hard and quick, and other symptoms of the sympathetic fever set in. There is costiveness, of course, when the alimentary canal is itself obstructed. This symptom occurs also when it is only omental hernia. There may be ineffectual attempts at a discharge per annum. Above the constricted part, the peristaltic movement is inverted. Vomiting early occurs, and continues till the contents not only of the stomach and duodenum, but of all the intestines above the hernia are brought up, the ejections being more or less fæcal. These various symptoms continue more or less severe, until

MORTIFICATION begins, when the patient becomes easy and thinks he is getting *well.* The abdomen sinks; and if examination is made over the protruded parts, *crepitus* may be felt. The vomiting gives place to gulping and ominous hiccough. The apparently flattering changes soon betray themselves by sinking, clammy sweats, rigors, etc. *The hernia subsides* spontaneously, or is easily reduced by the finger. This sometimes precedes any obviously alarming change, and is immediately followed by a *satisfactory stool.*

When this EASY OR NATURAL REDUCTION takes place suddenly, in a case of some hours standing, you may be pretty sure that your patient will die. And here let me warn you never to be so inconsiderate, as to fall into the error that physicians as well as patients have often done—mistaking pain for danger, and the ease arising from insensibility, for a ground of hope. The feelings of the patient on his final release from suffering, are well calculated to deceive. What of life is left, when death is begun, often seems all the freer and fuller. The old maxim, "while there is life there is hope," would be truer if it ran, "while there is pain, there is hope."

Still, in rare instances, which are among the wonders of nature, strangulated hernia has been spontaneously recovered from, without either reduction being effected or adhesion taking place—that is if it can be called recovery for the protruded parts to slough off and leave an artificial anus.

When called to a RECENT CASE of hernia, if inflammation has *not* yet taken place, you should endeavor by all means, whether there be irritation or not, to "reduce," i. e., to replace the protruded parts within their natural cavity,

In order to REDUCE with more facility, place the patient on the sound side in a horizontal posture, elevating the hips, however, and flexing the thigh of the affected side upon the abdomen while you draw it down toward the other. By these means you draw off the incumbent mass of intestines, and relax the muscles and integument over the points of protrusion. Although the limb is somewhat in your way, it is better to maintain this position until the desired object is attained. Then, for what is technically called

THE TAXIS. Commence pressing up to and within the point of protrusion as much of the tumor as you can with *one forefinger*, while the other hand supports and gently elevates the whole of the sac. Retain all that you have brought up with the first finger, and reach down as far as possible with the middle finger; bringing up and securing with it as before. The forefinger may then be again brought into requisition, and perhaps the ring-finger also. Continue the operation until all the parts are carefully returned in the inverse order of their emergence, pressing gently all the time with the other hand, so as not to contract the bulk of the sac, and avoid irritating it by too much handling.

I must bring under your notice one most efficient MEANS of REDUCTION which appears to have been strangely overlooked, though to me, at least, it has long seemed the most obvious and natural of any that can be devised. I have often easily succeeded in cases where there was considerable irritation, and sometimes even a degree of inflammation, by placing the patient in the position before described, and applying a *large cup* to the abdomen, covering the umbilical region. In one instance that I well recollect—for it was my first case of strangulated hernia, as well as my first "experiment" with the cup—the patient had been in terrible pain for several hours, and there was strong evidence of strangulation when I arrived. After regulating the patient's position, and ascertaining the critical state of the case—it being complete inguinal hernia, with a large tumor too sensitive to allow of the necessary manipulation—I looked about for some means of getting the advantage of *traction from within*, as a substitute for pressure from without. The only thing in the room that seemed available, was a half gallon pewter measure. But the *spout* or lip was in the way. I recollected, however, that fire could remedy this obstacle; and seizing the vessel, ran into the kitchen and melted off the projection. Inserting and firing a sufficient amount of cotton, I clapped it on, and instantly had at least a quart of intestines in it—a considerable proportion of the abdominal contents—among them no doubt, part of those that had constituted the *hernia*, for that *was gone*. Instantaneous reduction without external manual assistance, was the happy result.

I mention this successful experiment *because* it was *not* a lucky or accidental thought. I had made up my mind beforehand to try the measure. The idea occurred to me while listening to the first lecture I ever heard on hernia; and there and then I determined on availing myself of it in the very first case that should fall under my hands. I said nothing, however, on the subject until I could speak from *experience*. An opportunity was afforded a few years after, in the case just described. In every case of incipient strangulation, without actual inflammation, that has since occurred in my practice, I have had recourse to the same expedient, with the same success.

The internal traction by CUPPING has many advantages over pushing in by manual taxis, when the latter is not easily effected without much handling. A moment's reflection will satisfy any one that the sudden withdrawal of so large an amount of the intestinal mass, must be accompanied with a powerful tendency to what may be well called "spontaneous reduction," in comparison with any other artificial means. The force thus brought to bear is precisely in the best possible direction, and is applied to the parts directly concerned, and no others. The difference between this pulling, and the usual pushing in, of the knot of the intestines, is like the difference between "pulling out" a common bow-knot by the end left for the purpose, and literally untying it by pushing back the loop.

While I am giving my experience, I will relate another original mode of reduction; at which, however, I was only an astonished spectator. Occurring while I was quite young, and under peculiar circumstances, it made a strong impression upon my mind, to which perhaps I am indirectly indebted for the idea of my own plan. Few things indeed could be more calculated to make a boy think—and to think of becoming a doctor! An old gentleman living near my father's farm had been subject for a great part of his life to rupture. On several recent occasions it had become strangulated, requiring the aid of a physician. My father, though not a medical man, was generally called in to assist, whenever the old gentleman's "*bu'st* would come down again." On the occasion in question, the doctor had been sent for as usual, but had not arrived, and things were in a worse condition than ever before. Great was the alarm—and not without reason. Much time had already been lost, during which the patient had been laboring under all the usual violent effects of strangulation. He was now visibly sinking. All the means which the friends and neighbors had ever known or heard of, had been already tried without avail. Nothing now was looked for but an immediate dissolution. At this juncture, the other persons present were probably as much astonished as I was, to see my father, who was a tall, powerful man, seize the patient by the feet, draw them over his shoulders, and spring up from the floor with the sick man hanging at his back—back to back and head downward. In this style he made several sudden jumps, settling down again very firmly, and, *of course*, heavily on his heels. During this jolting and *traction by inverted gravity*, the strangulation was overcome, the tumor entirely disappearing; and the patient was laid upon his bed again, *cured* by this Brobdignagian operation. The *cupping* plan is certainly an improvement on the *backing*, as far as convenience is concerned, but not probably any more effectual than that would prove, should any of you ever find yourselves under the necessity of trying it. In case of *spasmodic* strangulation, the fright of the patient might aid the cure.

Unfortunately, however, you will often not be called in, until it is too late for immediate *reduction*, dangerous inflammation if not consequent adhesions having occurred in the parts.

Any considerable amount of *inflammation contra-indicates* other means for immediate *reduction*, but does not by any means authorize an operation. Under the measures we are in the habit of relying on, the necessity for the knife is often dispensed with.

THE OPERATION for strangulated hernia is sometimes successful and occasionally indispensable, but it should be the *last resort*. Still, as there is danger in delay, when once determined on, it is to be promptly put in execution. See that all other available means have been attempted before you have recourse to so dangerous and uncertain a measure; but when it must be done—*do it*, and do it *yourselves*, without waiting for others.

Let your first measure be an active *emetic*. The patient may be—probably will be—vomiting when you first see him. No matter—begin giving him the acetous mixture (For. No. 4) in repeated small doses, say at first a teaspoonful, a little more at the end of a quarter of an hour, double that amount in ten or twelve minutes, and so on, increasing the quantity and diminishing the intervals, until you have brought his system completely under the relaxing influence of the medicine; meanwhile use warm enemas of the same articles, combined with the infusion of senna. If you need to bring about still greater relaxation, this may be effected by the addition of a small portion of tobacco, though it is necessary to be cautious in the use of this "poisonous" weed, as very little will occasion dangerous symptoms in some patients, while others can take it with impunity and advantage. In *injecting* use a large syringe with a long pipe, and have the patient retain what is thrown up as long as he possibly can. The relaxing enemas should be repeated once an hour, if not oftener. *Fomentations* over the tumor should all the while be kept up, the materials being lobelia and stramonium (the herbs) and elecampane (the root).

[The most effective application that I have found, is Tobacco. Have a poultice made out of the leaf, wet with hot water (the common plug can be unrolled to answer), and applied to the part continuously.]

When you have brought about complete muscular *relaxation*, have the patient turned in the proper position (if he is not kept in it all the time), and, still continuing your fomentations, *endeavor to effect reduction*—as often as you can do so without causing pain. So long, however, as there is much tenderness, attempts at the taxis have little chance of doing good, and may do much harm.

But the application of the large cup to the abdomen, is unattended with any risk of increasing the inflammation. The intestines themselves, it should be remembered, may be quite free from inflammation, though the integuments over the sac are tender to the touch. There is great danger of the peritoneum becoming inflamed, but this is not likely to be more in the natural than in the abnormal situation of that delicate membrane.

Your relaxing measures should be *kept up*, even though your patient appear much *prostrated*. They may, however, be carried to an unsafe degree, and your judgment must be exercised in the question, according to the symptoms. There is no danger, however, with the articles recommended, of any *such permanent* prostration as follows from the use of tartarized antimony.

Should the strangulation be of some standing before you are called, or continue intractable in spite of all you can do, so that you have reason to fear *mortification*—change, after awhile, your relaxing for *stimulating fomentations*. A poultice composed of hydrastis and sumach berries, with a sufficient quantity of gum myrrh and capsicum, will be a good application. The same articles may be simmered in spirits, and cloths wet in such spirits laid over the parts. These applications may be alternated every hour or so with the former.

At this stage means must be taken to *sustain the patient's strength.* If he appears to be getting faint, he should be encouraged to drink cold water, and his flesh should be frequently wet with it. Brandy and water even may be taken with freedom. Should spasmodic constrictions occasion any of the difficulty, intoxication itself might be an advantage. There is little chance of this, however, in the condition we have in view.

Such measures as I have recommended will generally be sure to reduce active inflammation in a few hours. It sometimes happens, however, that *after* you have subdued the inflammation, you are still unable to effect reduction, owing to *adhesions* having taken place below the ring, thus constituting a case of

Irreducible Hernia. The adhesions may have existed before the strangulation occurred. Whether the adhesions preceded or followed the strangulation, your object must be to allay and keep down the inflammation. Although the hernia is now irreducible, the patient may still be relieved and preserved from further danger by proper precautions.

After inflammation has subsided and *strangulation* been relieved, whether you have reduced or not, give

A mild *cathartic.* The best for the occasion is *linseed oil,* recollecting to combine some stimulant or aromatic, as the oil of cloves, cinnamon or capsicum. Linseed oil is decidedly preferable to castor or olive oil.

Dry cups and scarifying over the parts before applying fomentations have been recommended. Rattlesnake oil is highly spoken of, as having a powerfully relaxing effect, though it would be hard to ascertain its value when used, as it has been, in connection with tobacco. From what I have seen, however, of the effects of this oil in other cases, I am inclined to think very favorably of it in spasmodic strangulation.

As for THE OPERATION, I must premise what I have to say about it by reminding you that ninety-nine cases of every hundred *ought to be relieved* without it, and will be, if such measures as I have recommended are faithfully carried out. Should these measures *fail,* however, or what is more likely, should they fail to have been applied in time—

Should *twelve hours* elapse without any satisfactory result; or should that amount of time have been lost before the proper measures were resorted to, and no favorable change be effected by them in the course of *three or four hours* thereafter, recourse must be had to

The operation. Bear in mind, that with this extreme measure the chances are three to one against the patient. Give him the benefit of it, however, when it is his only chance, or you are sure his danger is greater without it. [For directions how to operate, and anatomy of the parts concerned, see Part II.]

LECTURE XXXI.

THE RADICAL CURE FOR HERNIA IN GENERAL, AS WELL AS UMBILICAL OR VENTRAL HERNIA, WITHOUT THE KNIFE.

New subject, its interest and value, long overlooked, cures by simple truss, cases and conditions for success, frequency of Hernia and supposed incurability of the "rupture"—Dr. Morrow's Discovery—The means and method with accompanying and subsequent precautions—Irritating and astringent plasters, compresses, etc.—Hurlbutt's Patent.

Umbilical and Ventral Hernia—Distinctions—Liability—Reduction and subsequent measures for preventing recurrence, precautions.

I have a peculiar satisfaction in taking up the subject of this lecture—a quite new subject, I may observe, in a course of surgical instruction. Hitherto, the perpetual recurrence of Hernia, after the accident of rupture, seems to have been regarded like other evils as inevitable; and the great objects of study with surgeons have been the Taxis and the Operation. The evil or its danger being wholly mechanical, its remedy has been left to *mechanics*. Hence another great triumph of MEDICAL SURGERY in the hands of its most energetic practitioner and supporter — my friend and colleague — Professor Morrow. Though he himself has said little about it—and, as usual, the profession at large still continue ignorant of this great improvement—I hold it to be one of the most useful and meritorious services ever rendered to medicine and to humanity.

Like most all discoveries, it may look very simple now it is known; and the only wonder, with many, will be, that it was not always known and acted on. The plan will seem the more obvious and natural, when it is recollected that it is but following up nature's own and only plan — that which she adopts spontaneously in slight cases, and almost always with complete success in the familiar instance of umbilical hernia in children. I think it not unlikely that, in a generation or two, this now new and little appreciated Radical Cure of *Rupture* (and *preventive* of hernia) will appear the natural cure—something so simple and obvious, that those who take advantage of it will feel under no obligations to the man who first pointed out its practicability. Yet the bare fact that it has continued so long and still continues so generally unpracticed, proves how hard it is to take one sure step in the path of improvement, especially in a direction which has been regularly and systematically overlooked by the world's acknowledged guides. Taking such steps requires independent as well as progressive men—such as can see with their own eyes, and act as well as think for themselves, and use their own hands as well as eyes and heads. Besides telling you, then, how to treat rupture—as the great mass of medical men do not think, and will not for a long time be forced to think of treating it, I take the occasion of enforcing another lesson—the necessity for self-reliance and self-improvement, which last will always become, in time, universal improvement. Never look on what has been, as the measure of what *can be* done—if a limit at all, the good that *has been* is the minimum, not the maximum of what *should be.* Every one among you *ought* to make *some* improvement in his profession, and any one of you *may* become the unexpected medium of discoveries as glorious as any that have immortalized the most honored names in history.

In *recent* cases of RUPTURE, a simple *truss* will sometimes excite adhesive inflammation, and prevent the necessity for its further use—the parieties of the abdominal canal or femoral sheath effectually coalescing. But to insure any probability of this desirable result,

THE TRUSS should be made to extend from the point of first *emergence* out of the abdominal cavity, to the point of external *protrusion* beneath the integument—from the Internal to the External Abdominal Ring—so as to compress the whole Canal or Sheath through which the viscera have passed. The *pad* also should be hard, and the *pressure* kept up as strongly as the patient can bear.

This measure can not be relied on unless applied soon after the accident that caused the original rupture. The patient, moreover, must be kept quiet for several days after the first application of the truss; and whenever it is removed, he should assume the horizontal position, and not be allowed to move until it is securely fixed on again.

Hernia IN CHILDREN is easily cured by this mode of applying *simple pressure*, provided sufficient caution is exercised in not allowing the patient to move or stir whenever the truss is removed, and that it is carefully readjusted and worn for *several months.*

In ADULTS, however, the truss rarely succeeds in effecting the radical cure, even under the most favorable circumstances.

The numerous cases to be met with in every civilized community, sufficiently attest the truth of this last remark. One medical statician has even estimated that *one-eighth* of the human family is in the ruptured condition! He must, certainly, have lived among a weak-bellied race. Still, however extravagant may be this estimate, far too many are everywhere suffering or living in fear of death from this common accident; and this, too, where every drug store or apothecary shop is well supplied with trusses of every imaginable form and character; not a few of which claim to be all-sufficient for a complete cure.

I believe it is pretty generally admitted by the most eminent old-school surgeons of the present day, that the only certain *chance*—if I may use such an expression, by which I mean—the only plan that furnishes any reliable probability of a radical cure, is *an operation with the knife.* But this operation is not even one of the "kill or cure" resources. It *may* kill; and when it does not, may leave the evil operated for as bad as before, or worse. The risk is without anything like an equivalent chance of benefit. Hence, indeed, but few persons are tempted to try in such a lottery of life. The clumsy mechanical resource of the truss has to be still resorted to, without any hope of ever dispensing with such an artificial safeguard.

The substitution of such a method as I have the pleasure of describing, required a mind devoted to his profession and to improvement in his profession—an artist, instead of an artisan, who is always a routinist. It is literally the substitution of an "art of healing" for an awkward and inefficient *artifice*—mind for matter—medicine for mechanics. The viscera of the abdomen not being so well protected as those of the other great cavities, are liable to the accident in question. Its parietes or walls being *broken through* (as the word "rupture implies,) an artificial *buttress* is an obvious expedient. To fasten up the fissure and strengthen the walls all round—though intended to fulfill the same mechanical object and more effectually prevent the same mechanical risk—requires physiological knowledge and medicinal means.

The MAIN AGENT in this great work is simply our common Irritating Plaster (For. No. 1.) From observing the effects of that application in a great variety of other cases, Dr. Morrow came to the conclusion that it was just the thing wanted, to *insure* the requisite adhesion of any parts of the abdominal parietes involved in hernia. He had long been dissatisfied with the ordinary means resorted to for that purpose. Since his first report of a case so treated and permanently cured [See Medical Reformer, Vol. VI, No. 1, for July, 1846], the plan has been extensively adopted by Eclectic Practitioners, with the most satisfactory success. No failure, so far as we have been able to ascertain, has occurred in a single instance.

THE PLASTER made use of should be large enough to cover the whole canal or sheath—say from two to two and a half inches wide and from three to three and a half in length—and the PAD of the truss should be nearly as large as the plaster.

The PART to which the application is to be made should first be smoothly *shaved;* the plaster laid on carefully, the pad over it, and a truss brought to bear with considerable force, as much as the patient can bear.

The COMPRESSION, however, will have to be gradually lessened as the parts become tender. When the truss is taken off for this purpose, or to re-spread the plaster (which should be done every day) the patient must be made to keep perfectly still in a horizontal posture, with the thigh flexed upon the abdomen. After a while the truss will become too painful to be borne; when

A large *compress* must be substituted, and carefully kept in place by *bandages* round the body. The patient had then better keep to his bed and on his back. When obliged to move at all, he should be directed to apply his hand to the compress, as a further security againt accident.

The PURULENT DISCHARGE excited by the plaster, so frequently renewed, will be considerable. If the pain and irritation should at any time be so great as to deprive the patient of *sleep*, or extend downward along the *spermatic cord* to the testicle, remove the irritating applications for a while and substitute a slippery elm poultice.

The suppurating process should be *kept up* for from four to six weeks. Probably a shorter time would in most cases suffice; but it is better to err on the safe side. Better let your patient suffer a week too long than run any risk, by giving up this essential part of the treatment a single day too soon.

During the irritating process, be sure never to let your patient become *costive*. If the bowels are not all the time in a soluble condition from proper precautions as to diet, mild laxatives must be made use of, as often as necessary.

The *surface* may be allowed to heal as soon as you remove the plaster. You can dress it first, if you please, with an emollient poultice, and then with simple cerate or any of your healing salves.

As soon, however, as the healing process is sufficiently advanced to allow of stronger applications, make an ASTRINGENT PLASTER, of the extracts of the bark of white oak and red beech (Fagus ferruginea). A decoction of the oak bark or some similar article, may even be used as a *lotion* to the sore, before it is sufficiently healed to allow of the constant use of the plaster.

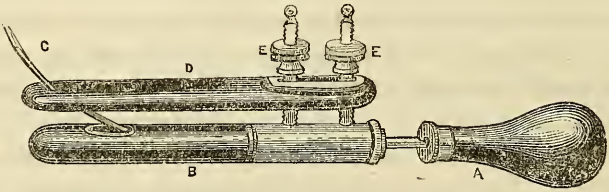
The TRUSS should be *reapplied*, as soon as it can be borne, again, over the astringent plaster; and both kept on (the latter being occasionally respread) for eight or ten weeks longer. All applications may then, as a general rule, be discontinued. The pressure, however, should be gradually lessened, before being entirely taken off, and the astringent applications continued for some time after that, tapering off perhaps with cold water.

This CURE, and this only, will be complete and effectual; the parts concerned being even stronger and less liable to give way, than if hernia had never occurred. If the patient is ever ruptured again, it will be in some other part.

In addition to the astringent applications and other measures originally devised by Dr. Morrow, I have had reason to believe that advantage resulted in some cases where I have directed a few drops of the *oil of eggs* to be rubbed on the parts, once or twice a day, after the removal of the irritating plaster. (This oil is obtained by simple pressure from the heated yelks). This article which really seems to have the effect of promoting adhesion is one of the principal agents relied on in Hurlbutt's patent for the cure of Hernia*

One *precaution* I must repeat. It is adsolutely essential to success, that NO PROTRUSION take place during the period of treatment. The danger is greatest when the sore is most irritable, and if the patient is not then warned against much straining or motion, all your treatment may easily prove a failure. Present restraint is the indispensable condition on which future freedom of action may be insured.

Fig. 19.



[Several plans for the radical cure of hernia have been proposed within the last twenty-five years, and some of them have obtained a very good success. Wutzer's operation, proposed in 1838, consists in obliterating the inguinal canal by invagination of a portion of the integument, and exciting adhesive inflammation. The instrument employed (Fig. 19) is composed of a wooden cylinder, B, somewhat flattened, smooth, three inches in length, rounded at its free extremity, and containing a passage for a curved needle, A C, which passes out a short distance from its end. Attached to this by a screw, is a wooden cover, D, concave on its under surface. In operating, a fold of the integument is carried up into the canal by the index finger. The wooden

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*The other means relied on in this *secret* treatment, are a pad, truss and plaster. The plaster is an extract obtained by boiling equal parts of the barks of Hemlock, White Oak, common break (Pteris aquillina— probably the rock-break, Pteris atropurpurea) and green osier (Cornus circinati). This is removed once in three or four days, and the surface lubricated with oil of eggs. As the cure progresses, the round leather pad is diminished in size.

cylinder well oiled, is then passed up, guided by the finger, until it reaches the internal ring. Having accomplished this, the needle is passed up through the canal and integument, and the cover screwed down moderately tight upon the skin. The apparatus is retained from six to eight days, any inflammatory action being controlled by the ordinary means. The patient is retained in the recumbent position some days after the instrument is removed, and wears for some months after a well adjusted truss, to protect the new structures until they attain the necessary solidity. Of one hundred and forty cases operated upon by this method, one hundred and seventeen were radically cured, four were ameliorated, six were not benefited, and thirteen relapsed.

Dr. Agnew's method is a modification of Wutzer's, though I do not see wherein it is better. The most popular operation in England is that of Mr. John Wood, which is thus described by Mr. Druitt:

"An incision about half an inch in length is made through the skin of the scrotum, over the spermatic cord, an inch and a half below the pubic spine. The skin is then separated, by means of a small tenotomy knife, from the subjacent fascia in a circle around this incision, about two inches in diameter. Next the finger is introduced into the wound and made to pass into the inguinal canal. The finger then searches for the arched border of the internal oblique muscle, and is carried behind it to the linea alba. Then a curved needle, with its point protected by a tube, is carried up along the concavity of the finger and made to perforate the conjoined tendon close to the internal ring, and to perforate the skin; but the skin, before perforation, is to be drawn upward and inward, so that the outer puncture will be, when the skin is restored to its natural situation, lower and more external than the point where the conjoined tendon is perforated. A thread is now put through the eye of the needle, and the needle withdrawn, having one end of the thread projecting. The finger next is made to feel for the external pillar of the ring, and to push the cord downward out of the way, and the needle is carried along it and made to pierce Poupart's ligament; meanwhile the skin is moved downward, so that the needle point comes out at the first puncture. A loop of thread is left there and held, while the needle is withdrawn. The finger is next made to feel for the internal pillar, and the needle to pierce the conjoined tendon, the internal pillar and triangular ligament, half an inch above the pubes. The point is brought out at the same aperture as before, the end of the thread is pulled out, and the needle withdrawn. The two separate ends of thread which have perforated the internal pillar, and the loop which has passed through Poupart's ligament, are pulled tight, and are passed through a hole in a boxwood pad, and tied over a bar. Thus the inguinal canal is first filled with invaginated fascia and sac, and then its sides are brought together by this subcutaneous suture, so that it is contracted and made to adhere to the invaginated tissues. A pad and bandage are applied, and the ligatures allowed to remain for three or four days."

Dr. Orr, of this city, was very successful in the treatment of hernia, using a truss with wooden pad. This pad he fashioned himself, so that it was exactly the shape and size of the internal ring, very gradually enlarging to the spring. His object was to excite adhesive inflammation of the borders of the opening, and thus effect a permanent closure. The wooden pads were changed, as the treatment progressed, so as to make less pressure, but still keep up the adhesive process. I have examined several cases thus treated—of inguinal, femoral, and umbilical hernia—in which a most perfect cure was the result. The important feature of the plan was, the accurate adaptation of the pad so as to cause adhesive inflammation, and not absorption of structure, as is frequently the case with radical-cure trusses.]

As a form of the accident in which the true or preventive cure has been always known, though the most effectual means for insuring it, are far from heing always resorted to, I shall now take up the subject of—

UMBILICAL AND VENTRAL HERNIA.

Both these consist in a protrusion of the intestines or omentum through the parieties of the abdomen. When the navel is the point of protrusion, it is *umbilical* hernia, to which *infants* are most subject a short time after birth, from their straining the abdomen in crying, while the bandage around the body securing the umbilical dressings is too loose. It sometimes occurs in *parturient* females, the muscles giving way during their powerful contractions upon the gravid uterus. It may be produced in any individual by any force applied to the abdomen sufficient to rupture the muscles. Hernia may occur at any *other point* along the Linea Alba, or, indeed, at any other part of the abdomen, though it would not be called umbilical, but *ventral.* "Ventral Hernia," then, means an abdominal protrusion at any other point than the Umbilicus, Abdominal Ring, or Femoral Sheath. True Umbilical Hernia is very rare in any other than infants.

The proper TREATMENT is the same in principle, whether for an infant or an adult, and whether the accident occur at one point or another *above Poupart's Ligament.*

First, for the REDUCTION of it, place the patient upon his back, with the thighs flexed upon the abdomen and the shoulders a little elevated.

In this position, the protruded portion will generally return spontaneously. If not, it can be easily pushed back by applying the fingers to the tumor. The *taxis* accomplished, apply a TRUSS, under which a *pad* should be placed, made as follows: Take a circular piece of the thick spongy portion of sole leather, of the proper size to cover the opening and extend from one and a half to two inches all round it. Excavate the fleshy side of the leather, so as to make it regularly concave, the center of the depression being about half an inch below the plane of the circumference. Place the patient in the position above described, and bring the parietes of the hole in the muscles in contact, so as completely to close the orifice, by pressing from the sides, while the muscles are in this relaxed condition. The edges being thus kept in contact, apply, directly over the point of protrusion, a layer of raw cotton or soft lint, wet in a strong decoction of white oak bark. This application should be just large and thick enough to fill the excavated surface in the leather, without causing any pressure. Apply your leather pad over it, and secure it by a bandage passed round the body, sufficiently tight to compress the muscles, and keep in contact the parieties of the hole. It is better to fasten the pad to the bandage before it is applied. This should be kept on six or eight days without being removed, unless it produce too much irritation. It should be wet once or twice a day with the oak decoction, by applying it upon the surface and allowing it to soak through the pad and cotton.

In INFANTS, a sufficient amount of adhesive inflammation will generally take place in three or four days to unite the parts;

though this dressing should be continued for ten or twelve days, diminishing the strength and pressure gradually. A bandage tight enough to support the muscles, and to prevent distension of the abdomen, should be worn for several months, and the part washed daily with the oak decoction, to which salt is then added. In an ADULT, it may be necessary to wear the first dressing for a month or more, and in one case of long standing I found it necessary to apply the Irritating Plaster and follow it with these dressings, when, finally, after about two months a perfect union had taken place, and the hernia was cured.

When it becomes necessary to remove the *dressings* during the treatment, great care should be taken that no protrusion then occur. The patient should be placed in the same position as when the first applications were made, and the parietes of the abdomen should be firmly held by an assistant, so that no motion will be allowed at the point of protrusion, and the muscles will not be put upon the stretch. The dressings should never be removed when the intestines are full. Great care should be taken to prevent costiveness. If the patient be in poor health aside from this, the proper attentions should be bestowed upon his general system.

LECTURE XXXII.

HYDROCELE—MEDICAL AND MECHANICAL TREATMENT.

HYDROCELE—Causes and Varieties—Diagnosis—Dropsy of the Cord—"Congenital Hydrocele"—Repressive Treatment—Gum-Elastic Bag, etc—a RADICAL CURE without the operation—Directions for OPERATING and after-treatment—Means for avoiding re-accumulation of fluid—Stimulant, Setons, etc.—Hydatids—Treatment of Dropsy of the Cord—Of Congenital Hydrocele—Hydrocele with Anasarca—Hernia and other complications.

HYDROCELE,

OR DROPSY OF THE TESTICLE, is quite a common disease. There is sometimes an œdematous condition of the scrotum, with serous effusion throughout its cellular tissue, which may be mistaken for true hydrocele—as also, on a superficial examination, may scirrhus or any other cause of swelling in the part.

"Hydrocele" is limited to a collection of serum in the tunica vaginalis, a serous membrane inclosing the testicle. It is but an abnormal quantity of the fluid naturally secreted to protect and allow free motion to the part. The immediate *cause* of the disease then, may be either increased secretion or diminished absorption. It may affect persons of all ages, and even exist at birth.

The swelling *begins* at the lower portion of the scrotum, or rather the accumulation naturally sinks and first shows itself there; gradually becoming diffused and extending up toward the abdominal ring. The tumor is finally pyriform in shape, and elastic to the touch—or it may be described as feeling like a bladder distended with water. It gives no pain on pressure, unless the testicle itself is pressed upon. The skin of the scrotum retains its usual wrinkled state, even though the part may attain an immense magnitude, the serous bag within sometimes containing a pint of fluid. The *fluid* itself is usually crystalline or colorless, occasionally yellowish.

It rarely happens that both sides of the scrotum are affected with this disease at the same time.

The *diagnosis* of this disease is sometimes difficult. In order to come to a satisfactory conclusion, you should examine into the history of the case. Recollect that hydrocele proper begins in the form of a tumor at the bottom of the scrotum, and gradually ascends; while *anasarca* of the scrotum is more diffused. SCIRRHUS of the testicle presents a uniform enlargement, is also accompanied with pain, and quite heavy, feeling to the patient and the examiner like a ball of lead. In hydrocele, moreover, when recent, before the membrane thickens, the whole mass of the tumor below the substance of the testicle is *transparent* or *translucent*—as may be ascertained by placing it, when the room is darkened, between your eye and a lighted candle. It may be distinguished from scrotal HERNIA, by observing that in the latter case the tumor commences *above* instead of below, and if the patient *coughs* the swelling will be enlarged, and a distinct impulse imparted to the finger pressing on it.

The CAUSE of the effusion must be inflammation of the serous membrane itself, but that *may* be occasioned by disease of the testicle, by direct external influences, or by metastasis from other textures of the same order. Most generally the cause can not be ascertained.

When there is enlargement of the testicle in connection with the serous accumulation, the case is called "HYDROSARCOCELE."

HYDATIDS may occupy the tunica vaginalis, and present the appearance of hydrocele, and be mistaken for it. The two diseases not unfrequently coexist, hydatids occupying a part of the cyst, while fluids accumulate in another part. These parasitical growths may adhere either to the serous membrane, the epididymis, or the substance of the testicle. This state of things can only be ascertained by the protruding of the cysts in question out of the wound.

HYDROCELE OF THE SPERMATIC CORD occasionally occurs, sometimes alone, sometimes in connection with effusion in the tunica vaginalis. It occasions an oval tumor near the abdominal ring, or it may be even in the canal above the ring, having so strong a resemblance to INGUINAL HERNIA, as to be easily mistaken for it. It is, however, free from pain, and transparent, and does not go down and disappear, on placing the patient in a recumbent position, as will be the case in hernia, unless it is strangulated, when the nature of the case will be but too evident from other symptoms. Dropsy of the cord is also to be distinguished from VARICOCELE, as will be noticed under that head.

CONGENITAL HYDROCELE has some peculiarities; and cases of the same kind, which occasionally occur in after life, are incorrectly called by the same name. The original connection between the tunica vaginalis and the peritoneum, of which it was a part, continues, and the fluids that collect in the cavity of the *abdomen* descend and accumulate, generally producing dropsy or "hydrocele" of the tunica vaginalis as well as of the cord. This may be distinguished from common hydrocele by placing the patient on his back and raising his hips, when the swelling will entirely recede, but instantly reappear when the erect position is assumed. The other symptoms of hydrocele, as transparency, etc., have to be also considered, as the affection may be mistaken for HERNIA, with which it may also coexist (the same cause occasioning liability to both.)

TREATMENT.

In recent cases, and in young persons in whom the absorbent system is active, you may sometimes succeed in effecting a cure by constitutional means—such as active hydragogue cathartics, diaphoretics and diuretics, frequently repeated for a considerable length of time. ABSORPTION may be aided at the same time by suspending the scrotum in a bag and "T" bandage, and by stimulating applications to the surface. The solution of the muriate of ammonia and vinegar is a good lotion, keeping the parts constantly wet with it. Or the stimulating astringents may be applied, such as the compound tincture of myrrh, diluted with an equal quantity of the decoction of marsh rosemary, or of the Epiphagus virginiana. This article, if relied on, should be applied once a day, so as to produce a good deal of smarting and pain for a short time.

PRESSURE on the scrotum, as well as suspension of it, will greatly stimulate absorption. Some convenient means of making equable pressure on this part was long wanting. To Professor S. M. Davis, of the Syracuse Eclectic School, I am indebted for a suggestion—original, so far as I know, with him—that has completely supplied the desideratum. At least I do not find it alluded to by any of the authors. It is to fix round the part, previously covered with a layer of raw cotton, moistened with the stimulating lotion, an

India Rubber Bag. The bag should be so small as to require considerable distension to get it on. I have found it convenient to have it previously distended to the requisite size by two or three coils of watch-spring, which can be drawn out when it is on. Another *improvement* on the invention I have a right to patent (you know how much I approve of patents!), is an elastic, open ring at the mouth, which may be conveniently pulled out at any time when it is required to re-wet the cotton.

I have succeeded by this new means in *avoiding the operation* and effecting a RADICAL CURE in several severe cases. In slighter forms of the disease, I have always found it to suffice, not having failed in one such case.

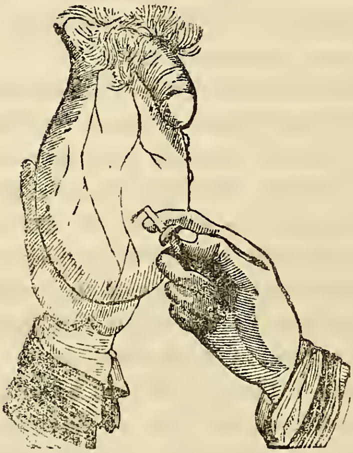
But in a case of long standing, where the quantity of fluid is large and the tunica vaginalis thickened and insensible, external and constitutional means will not be sufficient. You must then resort to the long established

OPERATION,

for the purpose of removing the fluid, and preventing its reaccumulation by such means as will substitute *adhesive* for *effusive* inflammation between the folds of the tunica vaginalis.

As this operation is a very simple affair, I will show you how to perform it in this connection. Taking hold of the scrotum from behind, and stretching it tense, make an incision through the integument with a scalpel or bistoury (at any point not too elevated or too near the septum or raphe, between the two sides). Through this cut, introduce the trochar inclosed in a canula, and push them on into the sac in such a direction so as to avoid the testicle. This can be held up out of the way by the left hand, though the contraction of the cord on handling the part (which may be made more effectual by previously applying cold water to the scrotum) will generally draw it out of danger. Withdraw the trochar, and push the canula further on into the sac, and fix it there until all the morbid accumulation has drained off, taking care to allow none of it to pass into the cellular tissue of the scrotum (where it would cause inflammation and perhaps sloughing).

Fig. 20.



If you have not a trochar, all the parts may be cut through with your bistoury, and a catheter or any tube about the size of a goose-quill will answer for the canula.

After having drawn off the fluid by means of your canula, inject through it brandy and water, port wine, or some other stimulus. This is to be left there until it produces considerable smarting or pain; then draw off and let the canula be removed. Take care never to draw away the canula until the injection is all withdrawn, or the membranes may contract upon and retain it, producing more mischief than the natural secretion you have removed. After the removal of the fluid and canula,

Insert a TENT (or strip of linen) far enough in to remain, and keep up the inflammation; and prevent the external orifice from closing. Remove it from day to day and apply another, until a sufficient amount of adhesion has occurred.

If too high a grade of *inflammation* should be excited, the tent must be laid aside, and warm fomentations, emollients, etc., resorted to. It may even be necessary to use constitutional "antiphlogistics," such as emetics and emeto-cathartics. One of the best local means in such a case is to let the patient sit over the vapor of hot herbs, after which emollient poultices can be applied until the inflammation has subsided.

This operation for hydrocele is generally effectual. In some chronic cases, however, port wine and even brandy will be insufficient; you will have to use something stronger. I have made use of the compound tincture of capsicum and sanguinaria. In one instance, I even combined that with a pretty strong solution of sesqui-carbonate of potash. In this case the usual operation had been repeated several times, and wine and brandy had been freely used, and even a considerable portion of the tunica vaginalis taken out, without any beneficial result. I kept the caustic solution in for several minutes before I drew it off, and the patient was in pain from it for an hour or two; and the scrotum showed signs of considerably diffused inflammation. This was of course kept under, adhesion brought about, and no future operation needed.

In all cases after having drawn off the fluid, introduce your stimulating *injections;* and as soon as inflammation has subsided, apply the sal ammoniac lotion, together with some astringent, not forgetting the India rubber compress and the suspensory bandage. I have in some cases succeeded in effecting the radical cure by these applications, after simply drawing off the fluid without using any injection, and thus without the risk of undue inflammation—I might, perhaps, say, without any artificial inflammation, merely repressing that chronic effusive degree of it which already exists. I would recommend, however, in most cases where injections are not used, the insertion of a tent for a day or two. In mild cases, as I observed before, I have succeeded without even tapping. Should not this kind of surgery be much preferred, to that which at best only secures its object by bringing about an unnatural condition of the parts? The serous membranes are not so invariably doubled and provided with a lubricating secretion without some wise purpose, which must be frustrated by our obliterating the space between the folds.

The SETON is highly recommended by some surgeons, and as freely condemned by others. It is applied in this manner: While the canula remains in place, insert through it a long seton needle. Pass it out through the tunica vaginalis, from two to three inches distant from the point of entrance. Tie the string or strings constituting the seton, and let it remain there from eight to ten days, observing *not* to move it as you would setons in other parts. This measure is said to be very successful in the hands of some practitioners. However this may be, I regard it as quite unnecessary.

The *seton* may also be introduced without the canula, by pinching up a portion of the scrotum and running the needle through from side to side in such a way that the two ends will be from two to three inches apart, and the fluid will pass out gradually along the course of the seton. I certainly prefer the regular operation of tapping once for all, to this continued dribbling.

Great *care* is to be taken, in performing this operation, not to injure the *testicle*, nor to allow the lancet or trochar to pass through the opposite fold of the tunica vaginalis, so as to make an opening into the *cellular tissue* on the outside, and cause a diffused inflammation there. The *injected fluid* should be strong enough, you must remember, to give the patient a good deal of pain immediately after its insertion, or it will do no good; and, for the same reason, you must see that it will do harm if left in too long. I have known several instances where the injected fluid was not all drawn off, thus exposing the patient to considerable danger as well as inconvenience. It is rare that the foreign fluid is absorbed.

Fluids prepared from zinc and iodine have been used instead of the old and familiar substances before mentioned, but without proof, I believe, of any special advantage.

If, after drawing off all the fluid you can, the tumor does not entirely subside, it is presumptive evidence that it is partly caused by HYDATIDS. If the latter protrude, the nature of the case is sufficiently plain. If they do not present themselves thus spontaneously, and you have reason to suspect their existence (which can not be known with absolute certainty beforehand), make a *large opening* and squeeze upon the tumors, when more or less of them will be pushed out, inclosed in their proper membranes or cysts. They may be all dissected away with the knife by laying open the scrotum sufficiently, or clipped off with scissors. This operation is very painful, but generally effectual. Clipping off a considerable portion and letting out their contents may be sufficient. The smaller ones or parts that remain will most likely be obliterated in the progress of the cure, especially if tents are used. If not, a second operation may be made, or a seton inserted so as to pass through the encysted part: this, however, is very rarely required.

For HYDROCELE OF THE SPERMATIC CORD, if external compression and stimulants, aided by constitutional means, do not succeed, I should recommend the insertion of a SETON. In having recourse to this measure, however, be careful not to wound the spermatic nerve or bloodvessels, or the vas deferens. When dropsy of the cord occurs in connection with that of the tunica vaginalis, or more common form of hydrocele, the tapping of the latter relieves the cord also.

In CONGENITAL HYDROCELE, or *other cases* arising from the same cause—a continued connection between the investing membranes of the testicle and of the bowels—merely letting off the fluid, for the time, would be useless; and any attempt to excite inflammation by the usual means, would be endangering the life of the patient, as that inflammation would be very likely to extend to the abdomen.

The *communication* between the abdominal and scrotal cavities must first be closed. For this purpose a proper *truss* must be worn, and such other means can be resorted to as I have lately shown you to be so effectual in Dr. Morrow's radical cure for Hernia. The Irritating Plaster, however, will not be so often necessary in this case. Never attempt the ordinary treatment for independent hydrocele, until you are satisfied that all the communication with the peritoneum has been closed for a considerable time. Such attempts may succeed, but they will generally fail, often injure, and always endanger the patient.

If ASCITES exist in connection with hydrocele, and there is found to be a communication between the tunica vaginalis and the abdomen, the whole of the fluid may, in that case, be safely drawn off through the scrotum—that being the only point where one tapping will be sufficient. The truss and other means above recommended for closing the communication, can be resorted to when the dropsical tendency has been overcome.

If *Irreducible* HERNIA exist in connection with hydrocele, no attempt should be made to cure by inflammation; but when the hernia is reducible, reduce and then proceed to cut off the communication with the abdomen by the proper treatment for the radical cure of hernia, thus preventing future hernia and one form of hydrocele by the same means.

When the TESTICLE itself is DISEASED, the first attempt should be to restore that part to a healthy condition. Until that is done, all attempts at curing the hydrocele will be not only futile but mischievous.

[As an injection for the cure of hydrocele, Tincture of Iodine is now generally employed. In recent cases, it is used of the strength of ʒj to water ℥j, but when there is less irritability the strength of the solution is increased until in old and stubborn cases the undiluted tincture is employed. It is thought by some that strapping the scrotum to the abdominal walls by adhesive plaster, assists materially in causing adhesion of the surface of the tunica vaginalis.]

LECTURE XXXIII.

DISEASES OF THE TESTES—CONTINUED.

HÆMATOCELE—Distinction of symptoms and treatment from Hydrocele.

VARICOCELE—Symptoms and progress—compression, etc., a radical cure with or *without* the ligature.

SARCOCELE—early means or final castration.

FUNGUS TESTIS, Soft Testicle or "Hernia humoralis"—its connection with gonorrhea, and treatment accordingly.

ORCHITIS proper—various causes, symptoms and consequences—active treatment.

IRRITABLE Testes—obscurity and complexity—treatment, general, local, and revulsive.

CHRONIC ENLARGEMENT, and other diseases of the testes—causes and dangers—early treatment, or the *radical* cure—palliatives.

HÆMATOCELE.

THIS is the name given to a swelling of the scrotum, resulting from a collection of blood instead of water in the tunica vaginalis. The extravasation, however, may be in the tunica albuginea (within the vaginalis), or simply an effusion into the cellular membrane of the scrotum.

It may RESULT from blows or other injuries of the scrotum or spermatic cord. A frequent cause is the wounding of some large vessel in operating for hydrocele.

The DIAGNOSIS of hæmatocele from hydrocele depends on its greater solidity and weight, and being neither transparent nor fluctuating. The history also will frequently determine the nature of the case. The external parts are often thick and black, as in urinous infiltration. This may at first occasion suspicion of gangrene; but the color is the only point of resemblance, and the general system is not at all affected.

The TREATMENT should first be directed to arrest any inflammation that may be present. The local applications may be fomentations and emolients, with the sal ammoniac wash. If the inflammation is excessive, give a cathartic and diaphoretics—perhaps small doses of some emetic, carried occasionally to the vomiting point. An excellent measure is a warm fomentation of the Polygonum punctatum. I have used, with good effect, a fomentation of the lobelia herb and scrofularia; cloths wet in salt and vinegar, applied over the parts as warm as can be borne, and frequently changed, will suit the case. Cold water, as used by some, is rather dangerous: when there is any tendency to gangrene, for instance, it lessens vitality too much and may hasten the fatal result.

After having reduced the inflammation, take means calculated to *promote absorption*, such as the long continued use of nauseants, and occasionally an active emetic. Hydragogue cathartics and diuretics should also be occasionally used. The scrotum should be suspended, and gentle compression applied as directed for the *prevention* of hydrocele. [See page 373].

If these means fail, the scrotum may be laid open, the coagula evacuated, and the wound allowed to heal by granulation. If after this operation there should be trouble from *fresh* hemorrhage, the bleeding vessel must be found and tied.

Many persons have been very unjustifiably castrated for this disease, the only benefit resulting from the loss of the *sound testicle* being the removal of the blood, which might have been done as just directed.

VARICOCELE.

The disease so called from analogy to the other names of surgical diseases of the parts, is simply a varicose condition of the veins of the spermatic cord. As might be expected from the length and unsupported position of these veins, they are more liable to this relaxed and diseased condition than any others. The left cord is more liable to this state than the right, perhaps from obstruction to the return of its blood at the sigmoid flexure of the colon, as well as from its greater length. The distended part of the cord assumes a cone shape, with its apex upward, generally extending from the testicle as a basis up to the abdominal ring. The veins can be separately felt, rolling under the fingers like twisted cords.

There is a constant uneasy sensation in the part, neuralgic pains not unfrequently extending down into the testicle—which is often diminished in size, from the proper amount of nutritive fluid being prevented from reaching it.

The swelling sometimes increases so much as to be inconvenient from its mere bulk, especially if the individual attempts to ride on horseback.

In the TREATMENT of this disease, great care should be taken that the testicle be kept suspended, so as not to pull upon the cord in the least. Strong stimulants and astringents should be applied to the tumor, together with as much compression as the patient can bear.

These means frequently succeed in effecting so much relief, that the patient suffers no sensible inconvenience. In two instances, one of them a student of this college, I have succeeded in effecting what I may call a radical cure, and by nearly the same means as effect the radical cure of hernia—stimulants and pressure in connection with inflammation excited by an Irritating Plaster. These cases were the last two I had; and I would recommend a trial of the same in all cases, as preferable to, and probably a substitute for

The NEEDLES. These are inserted behind the veins so as to cause them, with the help of pressure from a ligature, to close by adhesive inflammation. Great care, however, must be taken that neither the Vas Deferens nor the Spermatic Artery or Nerve be wounded by the needle, or compressed by the ligature—as any obstruction to the flow of blood through the artery, or the seminal secretion through the duct, would be fatal to the testicle.

[The latest and best treatment for varicocele is ligation with silver wire. The veins being separated from the spermatic cord, a spear-pointed needle, carrying the wire, is passed under them, and the two ends then twisted over a piece of cork. The patient should be kept quiet, and the ligature allowed to remain for six or eight days.]

SARCOCELE.

This, as the word implies, is a fleshy or flesh-like tumor of the testicle. The most common form is a simple enlargement depending upon chronic orchitis. This termination of inflammation in the part is most common in persons of a scrofulous diathesis, but occurs in others.

What is sometimes called sarcocele may be a form of encysted tumor, or one of the fibrous character. Or it may turn out to be cancerous, though scirrhus of this part is not by any means so common as seems to be imagined. [See Lectures on Cancer and Tumors.]

I need, therefore, say nothing here of the TREATMENT of these various affections, further than that where the enlarged gland resists the ordinary means for its reduction, the simplest and safest treatment is CASTRATION *at once*, before a malignant character shall have been fully assumed and affected other parts.

THE SOFT SWELLING OF THE TESTICLE, SWELLED TESTICLE, SOFT TESTICLE, OR FUNGUS TESTIS,

Is not an unfrequent affection, which is still called by a sort of *double* misnomer—

"HERNIA HUMORALIS."

This species or result of orchitis is most commonly the consequence of gonorrhea, or rather of its "cure," making its appearance about the time gonorrheal discharge ceases, or is suppressed. Sometimes it sets in suddenly while the gonorrhea is at its height, a metastasis seeming to occur to one of the testes or both. It may shift again from one to the other.

The only symptom for awhile is the swelling of the testicle, which, however, soon becomes painful. The hardness eventually comes on, which is at first confined to the epididymis; and the pain extends from this part along the course of the cord to the loins. Symptomatic fever generally occurs, with nausea and vomiting.

If the disease continues for a long time, a permanent enlargement of the testicle is the consequence, but it frequently subsides in a few days or weeks, at most, leaving no permanent injury. If it occurs during the hight of the gonorrheal discharge, it will generally subside on the gonorrhea being re-established.

The proper TREATMENT for this disease is that best calculated to allay the local inflammation. Let the parts be freely *fomented* with bitter herbs and vinegar; or better still, a fomentation of Polygonum punctatum, or this in combination with the lobelia herb, adding a small portion of stramonium. Give the patient an active cathartic, if his stomach will retain it. If there is too much nausea for this, give an *emetic* with warm diaphoretics. A tea of hops may be used with advantage. I have used a combination of Polygonum punctatum with Anthemis cotula while giving the emetic. Let the emetic be given in small doses, from ten to fifteen grains, fifteen minutes apart, say a teaspoonful of our common emetic tincture as a dose. (For No. 4.) Let the nausea be thus kept up for several hours, then vomit freely. This will excite free diaphoresis, which should be kept up by sudorific teas, such as an infusion of our common sweating powders. (For. No. 20). As soon as the stomach is sufficiently soothed to bear it, give an active cathartic.

But if the case arise from suppressed *gonorrhea*, use the stimulating injections—strong solutions of the mild caustic, or an infusion or tincture of Sanguinaria—and re-establish the gonorrheal discharge, or at least a purulent drain from the same parts.

A CHRONIC ORCHITIS, however, may continue after the inflammatory swelling has subsided; and require fomentation from day to day, with stimulants and compresses applied to the scrotum.

ORCHITIS,

Or inflammation of the testicle, may arise from other causes than that last considered, and most frequently does—such as wounds inflicted during the operation for hydrocele, bruises, and other external injuries. In these cases the symptoms will not at first be so violent as in the case of suppression or metastasis of gonorrhea.

SYMPTOMS.—The pain or irritation will at first appear to be near the bladder, and in the spermatic cord. Very soon the epididymis will swell; and then there will be a general enlargement and thickening, with a painful sensation of the whole testicle, the part feeling exactly as though it were inclosed in a firm compress. The patient suffers severely from pain, which occasionally shoots into the abdomen and groin, and even the hips and loins, and down along the inside of the thighs. All the nerves about the pelvis appear to be affected.

The patient suffers great constitutional IRRITATION. The pulse is hard, full and quick. The tongue is always furred; skin dry and hot; bowels constipated. If suppuration takes place, there are rigors; and if the process is not soon arrested, the tunica Albuginea ulcerates, and the matter is thrown out by fistulous openings. In most instances fungus growths will appear.

An occasional CONSEQUENCE of this inflammation is absorption of more or less of the substance of the testicle itself, so that it dwindles away to one-quarter or one-eighth its usual size.

The proper TREATMENT for this disease, both the constitutional and local, is that before recommended [for Swelled Testicles]—general diaphoresis, emetics and cathartics, with local fomentations and emollients. When there is much constitutional suffering on the part of the patient, I have found the Alcoholic Sweat to exert a favorable influence, soothing and allaying irritation. (The vapor of camphorated spirits is peculiarly soothing). The fomentation of the scrotum may be carried on at the same time. Then keep up nausea, and follow, it with free vomiting.

The BOWELS may be best relieved by *enemas*, especially if the patient has been costive for some time before, and if there is much irritation in the *prostate gland.* The removal of hardened fæces in this way often gives great relief. This relief may be afforded before the patient's stomach is sufficiently soothed to retain a cathartic.

Immersing the patient in a warm bath, is sometimes of great advantage; but I prefer the alcoholic vapor: it is more effectual as well as more convenient.

When the acute symptoms have subsided, the disease is apt to become chronic, just as in the case arising from gonorrhea.

If, however, you are called too late to prevent ULCERATION, the safest way is at once *to castrate*—that is, to perform the operation of castration on the affected side. The reason for this is, that the ulceration is not only liable from the peculiar structure and position of the part to become chronic and destructive, but *malignant*, endangering the life of the patient—or (what some would regard still more seriously), the other testicle.

[In a majority of cases, strapping the testicle to the abdomen will be found to give the speediest relief. The common treatment is frequently annoying, as the patient is laid up for days: exposing the part, and clipping off the hair, draw the inflamed testicle and scrotum upward, until it rests against the abdomen above the pubis. Now, having adhesive plaster cut the width of the roll, attach the first straps to the perineum and draw them somewhat firmly over the testicle to the abdominal wall. Then apply others from the abdominal wall from one side of the testes to the other. In this way, by alternating the course of the straps, the inflamed organ will be firmly fastened. Usually the pain ceases with the application, and the patient is able to go around, and the straps being renewed as often as they become loose, a cure is soon effected].

Irritable testes.

After orchitis, when the parts have assumed their natural size, and all other visible traces of inflammation have disappeared, a state of irritation continues which is often very inconvenient, and sufficiently important to be treated of as a separate disease. It may not make its appearance for months after the inflammatory disease has disappeared, and the individual appears to have become, in every respect healthy. In every case I have met with, the symptoms of spermatorrhea were present, though this is a circumstance which appears to have been overlooked by surgical writers. (See Lecture XXXVIII).

The Symptoms are extreme pain in the testicle after coition, tenderness of the whole testicle to the touch, with pain on the slightest motion, extending to the loins and back, and sometimes to the urethra. There is seldom any enlargement of the testes: they may even be dwindled in size. The fixed pain is generally located at some particular point, and otherwise of a neuralgic character. The patient is apt to lie on the side opposite to that which is affected.

Nausea and vomiting are often among the concomitant symptoms; and the patient's mind very soon becomes dejected.

The disease may continue for a long time, even for several years, perhaps only troubling the patient occasionally, while at other times he is comparatively free from it.

In the treatment of this disease I have been able to benefit the patient more by general than local remedies. The general health must be attended to; and then the "*spinal rheumatism*" (which will almost always attend the long continued irritation) may perhaps be relieved by warm fomentations. The Irritating Plaster, however, applied to the loins, extending from above the last dorsal to the fourth lumbar vertebra, has had a more beneficial effect than any measures I have seen used.

In one case where the patient had been afflicted for nearly twelve months, and his health was much reduced, he began to recover as soon as purulent discharge was brought out by a plaster about five inches square; and in a few weeks he was entirely relieved of all disagreeable symptoms. In addition to this, I gave the patient the Restroative Bitters, alternated once a day with a strong tincture of Macrotys racemosa in ʒij doses or gr.j of the macrotin. He also had the alcoholic bath once a day. An active emetic was followed by a cathartic about once a week, and the bowels kept regular in the meantime by the comp. powder of senna. Small portions of podophyllin were also added to the bitters with good effect. *To the testicle* the sal ammoniac lotion was applied once a day, fomentations having been used in the earlier part of the treatment. But after the Irritating Plaster began to take effect, no local applications were required.

The patient recovered completely, and has since remained free from any recurrence of the distressing affection. The case followed orchitis, brought on by a bruise of the testicle, though connected with former habits of onanism.

In this affection, as well as in all others of the same parts, the testicle should be kept suspended by a "T" bandage.

Chronic Enlargement of the Testicle

Often follows, not only in consequence of inflammation and other diseases of the part, or neighboring parts, as urethritis for example, but from habits of excessive venery or masturbation.

Have the part constantly supported in a sac and kept up by the "T" bandage around the loins. Apply fomentations and stimulating and astringent washes. Let exercise be avoided, and the horizontal position preserved as much as possible. Give active purgatives as often as once in four or five days, taking care to have the bowels regular all the time, and the skin in a state of healthy activity.

The camphorated plaster applied to the scrotum, in connection with compression and suspension, will frequently exert a favorable influence.

But it not unfrequently happens that patients who have brought on their disease by the causes above alluded to, will relapse into their former indulgences. In this manner, sooner or later,

Active inflammation and ulceration may be induced; when it is high time for *the radical* cure, that is, castration.

Sometimes fistulous openings occur from ulceration of the testicle, where still the cases may not be so bad as to positively require castration, or the patient may be invincibly opposed to the loss of what is so commonly regarded as the highest evidence of manliness. Such individuals as we are here concerned with, had better be eunuchs than what they are. They may not think so, however. In that case, all fungus growth must be destroyed by caustic injections. By this and other appropriate means you may succeed in relieving him from the ulceration, though the testicle will generally dwindle away and become soft; and very often the disease will return in a more malignant form.

As a general rule, in *all* diseases of the testicles, little hope can be entertained of perfect restoration after any organic injury or structural lesion.

LECTURE XXXIV.

FISTULA IN ANO.

Interest taken in this disease?—Definitions and distinctions—Liability of anus to fistula—Causes—Abscesses and preventive treatment—General measures in confirmed fistula—"*The* operation' exclusively relied on—Its results—Reasons for preferring the ligature to the knife—Directions for applying—and for incomplete cases—Time for cure—Danger in pulmonary complications!—Cases.

I AM about to call your attention to a disease as common as it is distressing, and in the treatment of which I shall depart very widely from established authority. On these accounts, I shall endeavor to be quite explicit, and shall perhaps appear to be too minute and particular. This blame I willingly bear—nay, court. The only danger is from the opposite fault.

The author of a recent monograph on this subject, thinks it necessary to inquire why such an affection as that in question, and one so naturally concealed by the sufferer, should be a subject of such general interest, even to non-professional persons. For every disease, however, there is necessarily a class of persons more deeply interested than even medical men—the sufferers and their friends. This interest is of course more manifest in respect to chronic disease than acute, especially when it is one of great but gradual fatality, and of rare and uncertain cure. It is well perhaps that the non-professional public are not quite so indifferent about medical matters, as some professional dignitaries would seem desirous of having them. The people generally will find out by-and-by, that it is not only their "right," but their *duty* to look into what their physicians and surgeons are doing *with* them, as well as what their lawyers and politicians are doing *for* them, in matters of less consequence, and what their priests and preachers would *have* them *do* in matters of still greater moment. A more intelligent public and more inquisitive patients, are what the profession greatly needs, to make it more industrious in the acquisition of knowledge, and more cautious in reducing it to practice.

"The interest taken in fistula, both by the profession and by the public, can be accounted for," concludes the author alluded to,* "only on the well-ascertained fact, that the disease does not admit of remedy, except from an operation, which was formerly one of great suffering, and even of considerable danger." This curious passage implies not only the absolute necessity, but the *present* safety and matter-of-course *success* of the operation! I have no doubt that every one of you is separately acquainted, in his own neighborhood, with cases which imply something very different from this, and which explain the public interest in the subject by something more than the mere "fact" of an operation. The *real* fact is, that the disease is not only not cured without the operation, but often operated on in vain, and not unfrequently rendered worse than before—or, rather, converted into a new and more distressing surgical disease.

The term "FISTULA" is applied to all *ulcers* that have a long passage and narrow opening, through which the products of ulceration or the contents of natural cavities find exit. It is this latter circumstance, or their opening into some cavity of the body, that more strictly distinguishes "fistulas" from other "sinuous ulcers."

Of fistulas generally, it may be observed that they are ulcers of an obstinate character, having no tendency to heal, their sinuses being fortified by callous growths, though almost always exuding a sanious matter, or suppurating unhealthily.

The neighborhood of the *anus* is particularly *liable* to fistula, not only from functional derangement of the rectum, but from laxity of the cellular tissue, causing any abscess or ulcer that forms there to become diffuse, and the mobility of the sphincter preventing the healing process.

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*Professor Syme, of Edinburgh.

"FISTULA IN ANO" is, therefore, understood to imply the result of any abscess about the rectum, which *has opened* either just within or without the anus, or *both* on the external surface and into the bowel. The last condition is necessary to constitute

"Complete Fistula"—an open communication from the outside of the body into the rectum; one end of the ulcer connecting with the cutaneous surface, the other with the mucous.

The "Incomplete or *blind* Fistula," may connect by its open end either with the skin or the gut, being thus either a "blind *external*" or "blind *internal* fistula."

The SINUS, or fistulous pipe, is very rarely simple or straight. It is commonly not only tortuous in its course (agreeably to the popular usage of the kindred terms, "sinuous and sinuosity"), but branched. Several sinuses may thus exist where there appears only one, or several distinct openings be internally connected, or spring from the same source. This source or origin of the sinus, is always

An ABSCESS, walled up with hard cartilaginous matter, which is generally continued along the whole course of the sinus or sinuses. The lining of the pipe appears itself a semi-cartilaginous formation, but is to be regarded as a proper mucous membrane, which has the property of continuously secreting the thin yellowish pus, characteristic of fistula.

Notwithstanding this induration, fistulas are always extremely *tender* to the touch, so that it is difficult to probe them, until their morbid irritability has been allayed by appropriate applications.

If *neglected*, the local irritation and inconvenience will not long be the worst symptom. Irritation of the lungs is so frequent an accompaniment of this disease, and fatal consumption so often the termination of badly managed cases, that fistula in ano has even been looked upon by some as a sort of *alternative* or safety-valve for phthisis pulmonalis!

The most probable CAUSE of the frequency of fistula in this part was before alluded to. Besides the peculiar anatomical structure of the part, and the liability to derangement of its physiological function, external injuries and foreign substances lodged in the rectum have been known to be the remote causes. Habitual *costiveness*, or, rather, inattention to the calls of nature for evacuation, may no doubt give rise to fistula, as it does to stricture of the rectum—the mucous membrane "giving way" to pressure in the former case, instead of being *hardened* to it as in the latter. Ever so little fecal matter would thus be the commencement of an abscess, which might become a fistula, though the crevice in the rectum should heal, and no fresh irritation occur from that source. Constipation, however, and "torpidity of the liver," are by no means necessary conditions to the formation or continuance of fistula. Erysipelatous inflammation about the anus is still more likely than phlegmonous to degenerate into this kind of ulceration. Long neglected piles may easily become fistulous.

If you have *to treat* a case in the *incipient stage*—which, by the way, will rarely happen, the necessity of early attention being so little known—when an abscess has formed near the anus, but no fistulous pipes are yet clearly developed—make use of the usual means to allay inflammation, such as fomentations and emollient poultices, with diaphoretics and cathartics.

If there is evident *fluctuation* near a convenient part of the surface, puncture, or, what is generally better, *open* freely with *caustic potash.* Have an orifice large enough for all the pus that has formed to pass out as readily as possible. When this has happened, and everything is favorable, *heal* up as soon as you can, taking care not to allow the surface to heal before the abscess fills up.

The abscess should be cleansed daily with soapsuds, and if it manifest the least indisposition to become indolent, stronger alkaline lotions must be resorted to. Means to keep up steady compression, where it is practicable, will be beneficial. But you will not often be called on with a view, or in time, to *prevent fistula*—seldom, indeed, in any of its earlier stages.

When an abscess near the rectum is left to open itself spontaneously, it will often be by several orifices, the discharge appearing to come from different points in the surrounding cellular tissue. Some of these openings soon close up, while others, if not prevented by proper measures, will continue to discharge a more and more unhealthy pus, and become indurated and regularly "fistulous." In such a case, wash out the *opened abscess, and all the sinuses* that can be discovered, with soap and water, several times a day, applying a slippery elm poultice in the intervals. If it does not seem inclined to heal, or assumes an unhealthy appearance, substitute the solution of vegetable caustic as a lotion, weak at first, but gradually stronger, until the unfavorable symptoms subside. Then resume the simple soapsuds. Besides your emollient dressings, keep up as great an amount of *compression* as the patient can bear. The "T bandage" may enable you to effect this object. If, however, the parts are not perfectly soft or free from callous, compression will do harm.

These means, with *rest* on the patient's part, will often suffice to cause a very threatening abscess to heal up, instead of becoming a confirmed fistula. But if the case has been longer neglected, and become

The TRUE FISTULA, with *hardened* pipes, pouring out *sanies* instead of good thick pus, something more will be necessary.

The GENERAL HEALTH will then have to be regarded.

Costiveness must be removed, if present, or prevented, if necessary, by a mild cathartic at first; the bowels being afterward kept regular and rather loose, by attention to diet alone; or, if that is not sufficient, gentlest aperients.

If the lungs are affected, as is apt to be the case, they must be treated according to the symptoms, or as if they had taken on disease independently of the fistula. The pulmonary syrup will probably be a suitable remedy. (Form. No. 16.)

The alkaline bath (see Introduction) should be made use of in all cases, with proper friction and other measures for keeping up a free and healthy action of the skin.

But though these measures are necessary to sustain the general health of the patient, they would of themselves effect little or nothing toward the *removal* of the local disease. This is one of the few chronic cases in which local treatment is nearly all important, and alone to be depended on for *cure*.

This is the condition in which established "authorities," and all routine practitioners "subject" thereto, consign their patients to the tender mercies of the knife.

For "*the* operation," I shall *not* refer you, as usual, to the Operative Part of the Course; because I would never sanction a measure so often worse than useless, when we can effect the object in view by others, so much less objectionable, safer, and more certain of success. "The operation," by the way, is simple, and its object rational enough, were there no other means of attaining it, and *were* it oftener secured by that measure. The fistula is connected with the rectum, the sphincter being cut through, and kept from uniting again until the ulcer heals up to it from the bottom—that is, sometimes kept open forever after!—the patient losing all control of this important organ, and being subjected for life to an annoyance far more disgusting and distressing than any fistula, and more deprecated by many than death itself.

This "laying open," as it is familiarly called, and of which the books speak as if it were a mere trifle—as to the *mere operator* it no doubt is—this "operation for fistula in ano," is the sum and substance, the beginning and the end, of "regular treatment."

The *success* of this "sole reliance"—to say nothing of its occasionally fatal, and frequently *worse* than fatal consequences just alluded to—may be judged of by the fact that a large majority of the worst cases *we* are called to treat, are those which *have been* operated on. When not killed or cured, they are, of course, invariably injured by being "laid open." *This* is in private practice. Could the remote as well as immediate results of *hospital* "operations" be "laid open," what a "cutting up" business would *it* not be? Could graveyards speak (or did their *registers* record, as they should, the causes of mortality), I verily believe we should find that one-half, if not a far larger proportion, of all who are affected with this variety of fistula, ultimately die, either from the effects of the uncured disease, or of the "surgical cure."

Yet one of our surgical authorities* tells us briefly, that the "treatment of fistula in ano is simple, and *if* the disease be merely local, usually quite effectual!" He is even so well satisfied of this, that he advises us to allow abscesses about the anus to become fistulous! because, forsooth, their cure is then so very "simple and effectual!"

This favorite operation, I was about to tell you before, will be found described in every surgical work. You can refer to any of them if you ever choose to have recourse to so easy and mechanical an expedient—barbarous and murderous, I ought to say; for such it would be in *you*, when you know better, but prefer a chance to "operate," to certain success by more troublesome, though less *fashionable* means. If you prefer to run the risk—I should say, to subject your patient to the risk, for *you* incur none—you can have any amount of *authority* to hold you *harmless*. If you cut and kill, *your* life is in no danger. Every book likely to be consulted will bear you out, except one, and that one forgets to tell you what better to do! Of all our American writers at least, Gibson alone raises a dissenting voice against the otherwise unanimous opinion; but in doing so, he substitutes no satisfactory course of treatment.

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* Miller, Practice of Surgery, p. 289.

"An opinion very generally prevails," observes Prof. Gibson (Surgery, vol. II, p. 161), "that every fistula in ano requires an operation. *There can not be a greater mistake.* So far from it, that almost every case, where the patient is tolerably healthy, *might*, I am inclined to think, *be healed*, if attended to in the commencement, and judiciously managed. Nothing will contribute more to this end than absolute rest, simple dressings, moderate diet, and mild laxatives. I have known a fistula protracted and kept open for months, while the patient walked about, and healed in a week by perfect quietude and the horizontal position."

If this be so—if means so simple can lead to a cure in favorable cases, why should not measures a little less "simple," or more powerful, be directed in still more advanced stages; and how mischievous must be the effect of the "generally prevalent opinion," that nothing can be done to prevent or supercede the necessity of "*the* operation."

If something more effectual were used than the Philadelphia professor's "simple dressings," no doubt, with his other stringent conditions (if any patient could be induced to submit to them) of "absolute rest," or "perfect quietude," and the "horizontal position," many cases *might* be successfully treated, even without recourse to the ligature. That measure, however, is generally indispensable in all confirmed cases. It does not exact such an absolute *prostration* of the patient, and may be said, with the proper adjuncts, to *insure* success.

The LIGATURE is less objectionable than the *knife*, not only inasmuch as it is less alarming, and, when properly applied, less painful to the patient, and on account of the subsequent treatment being simpler, less confining; but its comparative slowness is itself an advantage. It *gradually* substitutes a healthy for an unhealthy action of the parts, by removing the cause of the latter; and thus not only obviates the liability to relapse, but the greater danger of other diseases occurring on the too sudden drying up of an accustomed drain. This danger is so considerable that it is, in some contingencies, held as a sufficient reason for not curing fistula; and in others, for only venturing on it with the precaution of setting up artificial issues in other parts! With the ligature, moreover, there is

Note.

To show what a hobby of *operative* surgery this unfortunate disease has been made, and how authority sustains (by *repeating*) itself, I will subjoin a few quotations. To begin with a popular book of Reference:

Gardner's recently corrected edition of the well-known Hooper's Medical Dictionary, lays it down, without any qualification, that "the cure is by a surgical operation."

Another recently *got up* American work is quite as positive: "The only effectual treatment is the division of the sinus and the sphincter ani muscle."—(Hastings' Surgery, p. 278—Philadelphia, 1850—a compend from Druitt, Gibson, etc.)

"The grand remedy," according to Druitt, in his careful digest of established English practice, p. 253, "is the division of the sphincter ani, so as to prevent the contraction of that muscle for a time [how often, forever!] and cause [how often?] the fistula to heal from the bottom."

Would it not seem that *medical* surgery had taken a disgust at the part concerned, and given it over to *dissection?* One only of our American writers is a little more hesitating or discriminating than the rest. His language (as quoted in the text) is quite a rebuke to the orthodox dictum: but, unfortunately, it is unaccompanied with any sufficient or satisfactory directions for a better practice than that fostered by the prevalent "mistake."

Our German brethren are much more discriminating in their judgments, as well as comprehensive and profound in their inquiries. It may be instructive to show to what an extent these mental and *geographical* differences affect men's opinions. I have before me the second edition of an elaborate work of established authority, as I have every reason to believe, in Germany, though of recent date. It consists of three volumes, with a folio accompaniment of splendid plates, all devoted exclusively to *Akiurgy* (that is, knife-surgery), or that *part* of Operative Surgery usually requiring bloody operations. Yet in treating this particular affection, for which *our* authorities resort to the knife alone, the author restricts its use to so few and exceptional cases, that it is equivalent to a proscription of it altogether. A critical history of treatment, *modern* as well as ancient, the whole biography, so to speak, and bibliography of the disease is given with truly German minuteness and accuracy. The most recent eminent surgeons of England and France are quoted, in corroboration, or for the purpose of justifying a dissent from their conclusions.

Of the four methods of cure—by Ligature, Incision, Excision and Cauterization—the author considers the first two the only ones *not* antiquated. *Liston* and other of *our* Operative Surgeons, dismiss the subject of ligature as out of date, because formerly associated with the *actual* cautery. With all his learning, the German Professor does not seem to have heard of or suspected a combination no danger of fatal hemorrhage from the hemorrhoidal vessels, or even temporary loss of control over the sphincter, as the division made by the cord usually heals behind it as it goes, if allowed to do so. Another danger obviated is that of inflammation from an extensive wound, in a delicate part and an enfeebled patient.

of the first and last named methods, so as to secure results altogether unattainable by either separately. This is the *American method*, not yet known to even German erudition; because our American professional *literati* have been too busy republishing or pirating English and French authors, to have had time to give back anything new of their own.

After fully discussing, then, the question between the ligature and the knife, our author gives the former a decided preference: "Verdient die Ligatur im algemeinen den Vorzug—Sie ist mit aufnaehme der S. 261 genannten falle ueberall angezeigt."

These excepted cases, in which he allows that incision may be admissible, are either so *very exceptional* as to be out of the question (as, for instance, the possible complication of *stone* in the bladder, which would certainly indicate the use of the *knife* in a different *direction*), or such as really afford additional reason for the ligature with *our* accompanying means (they being precisely the means *we* should use for "malignant or suspicious" disease, if unconnected with fistula). The only plausible objection to the ligature is confined to the single circumstance of the *outer* orifice being so far from the anus, that it would be too long in working its way through—a difficulty which we have not experienced, or, rather, as I have explained in the lecture, which resolves itself, in a medical view of the operation, into a positive *advantage*. In these apparent exceptions, moreover, our author premises all the time that the fistulas in question are not old or "hard cases"—"Noch nicht alten fisteln—nicht starker callositaet der fistel"—that is, that they are not bad cases at all, but such as he had before admitted *might* be cured, by proper medical treatment, without even tying, much less cutting.

Lest we be suspected by those to whom this information will be so strange, in their confidence in *partial* authority, and as this valuable work has not yet been translated into English, we will give, not all he says favoring our views, but just one paragraph, in which he lays down formally the cases *for* the knife.

1st Method—*Incision*—

Indicated in still *recent cases* (beinoch nicht alten fisteln), particularly if there be many branches, or the outer orifice be far from the anus, because the ligature would then take too long in working its way through—where it is desirable to lay open the bowel for the very purpose of exciting stronger and more continuous inflammation—in complication with malignant or suspicious disease of the neighboring parts, which the ligature might render worse, or with foreign bodies, stone in the bladder, for example:

Contra-indicated in fistulas, the *inner* opening of which is more than an inch and a-half [1½ zoll] above the anus—where there are many or large hæmorrhoidal tumors — when the fistula has become much hardened with callus—[bei starker callositaet der fistel] or when there is great irritability of the rectum, risk (or rather *apprehension*—besorgniss) of a secondary affection or habitual diarrhea."—Akiurgie von Ernst Blasius, M. et C. D., Prof. der. chir. an der Konig. Universitaet zu Halls—III Band, 261 P—Halle, 1841.]

Dismissing, therefore, all thought of *the* operation, in *your*

Treatment of Confirmed Fistula,

The first thing is to ascertain as precisely as possible the magnitude, direction and number of sinuses.

The *probing*, however, for this purpose may have to be delayed in consequence of the irritable condition of the parts. In such a case, make use of the bitter herb fomentations two or three times a day, together with emollient poultices. Keep the patient perfectly quiet. The bowels should be gently moved by the compound powder of senna, or some other mild hydragogue.

After a short time, under measures of this kind, the patient will be able to bear the operation of probing, though it may even then be quite painful. Having thus ascertained the state of the case,

If the fistula be already "complete," and large and direct enough for your purpose, *arm* a common silver probe with your *ligature*. For this purpose, the best material is sadlers' silk, doubled. Pass your threaded probe from the external to the internal orifice. When it is through, turn the outer end a little upward, and the other may be seized by your finger in the rectum, and the string brought down. By separating the nates, you may be able to see the end of the probe and ligature; or the rectum may be dilated, and the operation facilitated by the Speculum Ani.

The two ends of the ligature are to be *tied* as firmly as the patient can bear, and afterward drawn a little tighter every day. This *tightening* is commonly effected by rolling on or twisting with a piece of wood. A better plan, at least, according to my judgment—since I have been at the trouble of *inventing* it, though not of getting a patent!—is, before tying to let the ends of the string pass through a large vial-cork, separating three-fourths of an inch where they emerge, and passing over a little wooden roller, fitted to radial grooves cut on the end of the cork. These notches will hold the stick, after turning or twisting, like the fall of a windlass. The surface is thus less irritated, the pressure of the cork being more equable than any "toggle" fixed there.

If there are several sinuses, they should all, or the principal ones at least, be treated in the same manner.

While the ligature is on, the parts should be fomented every day, and every sinus thoroughly injected two or three times a day with our usual alkaline lotion. The caustic powder should also be inserted, by means of pledgets of lint. These must be "crowded in," and allowed to remain till the next dressing, that the caustic may gradually dissolve, and have its proper effect upon the cartilaginous growths.

As soon as the ligature has *cut* its way completely *through*, foment and poultice, continuing the caustic applications, completely filling whatever fissure may remain with the armed tents. Every part will then rapidly heal, the caustic causing no impediment to the process, but rather seeming to stimulate to a more healthy and rapid *granulation*. When the restoration is nearly complete, and but little matter is discharged, the parts feeling soft and natural, the poultice and fomentations may be dispensed with, and the black save, or some other simple dressing, substituted.

There is no danger from this course to the sphincter muscle; the healing process, as was before remarked, following up the ligature, and being generally nearly complete before it comes away. It is sometimes even necessary to prevent this, and keep the fissure open until the proper dressings have removed all callus; after which it can always be readily healed up.

Should there be other sinuses branching from or leading into the main one, they must not be closed until all callosity at their extremity or along their course has disappeared, and the parts seem natural to the touch and without soreness. Enlarge all such branches by the armed *tents*. These are best made of hemp-cord, well charged with the caustic, after being moistened a little, and retwisted of the size required. The size should be increased, as the orifices of the pipes permit, being careful to keep the original sinus well distended while you are dressing the others. These measures must be every day repeated, until all appearance of callosity has gone, when milder dressings may be made use of, and the parts allowed gradually to heal.

If your case be a "*blind internal* fistula," ascertain the point where it approaches nearest the external surface. Open with a pointed probe, or by caustic potash, and having it thus "complete," proceed as before directed.

If it be a "*blind external* fistula," it need not always be made "complete." By the measures before directed, and particularly the persevering use of the armed tents, it may very often be cured without the operation even of the ligature. If, however, it be a very *bad case*, and remain obstinate or get worse, *after* the proper applications, insert the armed or threaded probe clear through the bottom of the sinus, into the rectum; bring the ligature out; and proceed as before directed for "complete fistula." Whenever, on passing your finger into the gut, you can discover a hard lump at the upper extremity of the sinus, you ought not to delay, but perforate the rectum, and introduce the ligature at once. This laying open of the source of the original sinus is the safer way, inasmuch as the secondary branches, as well as this callus reservoir, can thus be reached, and easily overcome by the process before described, if you take care to keep open a large orifice by means of the tents.

Recollect that the Elm Poultice (kept on by a "T" bandage) should be used over the affected parts during the whole of the caustic treatment; the peculiarity of this cure consisting in the callosity being dissolved and carried off by the suppurative process, the fistulous ulcer being made to heal by healthy granulation, and leaving no trace of the morbid formations.

I ought to inform you, and *you* your patients, that it frequently takes from three to six months to cure a bad fistula in ano. There need be no anxiety, and should be no misunderstanding on this point. A much speedier cure would not perhaps be desirable in all cases, even were it possible.

It not unfrequently happens, that when you are called on to treat a long neglected or mistreated case, the patient is laboring under severe *pulmonary difficulties*, or even already in advanced stage of consumption. This is the condition in which, according to the books, to cure fistula would be wrong!—the complication which renders even "*the* simple operation" not advisable. The removal of the disgusting local nuisance *by the knife*, has been followed by fatal consequences. The damming up a *crevasse* in the river's bank, without clearing out the natural channel, has been found worse than useless. Therefore, nothing ought to be done! The soul's leasehold of "the house it lives in" now depends on not venturing to obviate the inconvenience of a smoky chimney.

But be assured that a *proper* cure of the fistula in ano will be your best chance of *preserving* the lungs and the life of the patient. Even where the case is too far gone for a restoration to perfect health—where your object is only to retard the fatal *progress* of consumption, your first step toward it is to restore the healthy function of *every other part*, and put an end to every source of irritation and aggravation.

As to the danger of "drying up a long established drain," you will observe that in our mode of "curing up" fistula, instead of at once arresting, we for a long time *increase* the drain from the affected part, changing it, at the same time, from a self-perpetuating, sanious and fetid character, to a soothing, self-limiting, and sanative suppuration.

When the lungs are not so seriously affected, *their* disease subsides as soon as the free and healthful discharge is excited about the anus. In numerous cases, where the sufferers seemed far gone in consumption, the fistula treatment was all they required to arrest the pulmonary disease.

I recollect a gentleman coming from the northern part of the State to this city, so reduced by apparent consumption, as well as anal fistula, that his friends took their last farewell of him, fully persuaded that he came here but to end his sufferings in death. In four months he was restored to them in perfect health, as fleshy as he had ever been in his life, and he has since continued to enjoy better health than before his "latter end" was so doubly threatened. His "consumption" was indeed deeply *seated*—fundamentally fixed—but fortunately in the pelvis, instead of the chest.

Many other such cases I might mention; nor do I recollect one instance out of more than fifty, treated either by myself or Dr. Morrow, in which the patient did not entirely recover, or in which he appeared to suffer any inconvenience from *not* having fistula!

I have at this time a patient, who four months ago, when I commenced treating him for fistula, was pronounced by experienced physicians, far, if not fatally, advanced in consumption. He is now quite fleshy, and, according to his own account, in better health than he had known for five years previous—though the *fundamental* restoration is not yet quite complete. He had, when I first examined him, no less than five distinct fistulous openings—two of them extending three or four inches up along side the rectum, and discharging their fetid currents through the edge of the gluteus muscle, about an inch from the anus. There are now but two little ulcers, not an inch in depth. I shall soon send about his business this other victim of *phthisis pelvo-fistularis!*

Yet why are we allowed exclusively to claim this amount and kind of success? The principle of treatment did not originate with us (though the *measures* necessary to make it effectual *did*), nor have we sought to confine its knowledge to our own ranks. We make no pretensions to any *knowledge* which others *may* not have. It is of what they *do*, or rather, what they *fail* to do, that we complain. Why is not this, in default of some other equally successful treatment, diffused over all the length and breadth of the land, until not a sufferer remains for us individually to relieve? Why is it not taught in any of the thirty-seven Old School Colleges, nor mentioned in any "established" text-book that can be named, unless for the purpose of indiscriminate disparagement?

The main features of this "cure" were adopted more than a generation since by Dr. Beach, and published over twenty years ago in his "American Practice." It has been publicly taught in the Reformed Schools of New York and Worthington, and for five years now in Cincinnati. All who have learned and practiced it, have been well satisfied with the results. Still, simple, rational, and certain of success as is this course, nothing like it is anywhere taught, or anywhere practiced but among us, and a few scattered individuals who have learned or *stolen* from us. (What I mean by stealing, I will tell you presently). Science is a robbery when it is thievishly appropriated. The grand or petty larceny, in this case, depends not on the using, but *abusing* the thing—not on the way of getting, but *forgetting.*

So obstinately blind, I was proceeding to say, are the regular or *routinier* profession to all improvements in medicine, that do not come to them through already established authority, that thousands of patients have been allowed to drag out a miserable existence, dying at last of this very disease, or its mere mechanical treatment, since the effectual means of a safe and radical cure have been published to the world. Though the plan has been so openly practiced by us, with such evident success, yet the great mass of the profession, instead of adopting it, with or without acknowledgement—which latter they have in some other instances condescended to do—have in this case permitted the "open secret" to be practiced under their nose, upon patients taken out of their hands, by a practitioner who pretended to exclusive possession of it!

[A patient afflicted with anal fistula should be thoroughly examined, and his prospects of longevity be as carefully estimated as though the medical attendant were about to assume a pecuniary risk upon the life of his patron. If phthisis has made serious inroads upon the respiratory organs and the fistula is not distressing, no judicious surgeon would institute operative measures calculated to shock the nervous system, and to throw an additional load upon the vital functions. On the other hand, as hemorrhoids, hernia, displacements of the uterus, and other difficulties of the pelvic regions, produce cough and great physical and mental depression, it is not well to decide against the treatment of fistula in all cases that seem to be complicated with a pulmonary affection, for experience has shown in a multitude of instances that the cure of the fistulous disease has been followed by marked improvement in the general health. At one time, M. Henteloup, believing fistulous drains beneficial to consumptives, practiced at La Charite the operation of establishing artificial fistula in tuberculous patients. This practice, however, met with no success. The derivative effect of the anal irritation made no decided impression upon the lungs.

It is well known that a pustule or phlegmon in the vicinity of the anus is not likely to heal kindly, but purulent cavity collapses into a sinus or degenerates into a fistulous tube. At first, there may be only one pus-secreting pipe that communicates with the bowel, but in time this single channel branches until all the loose tissues in the region become ramified by the old and newly formed fistula. In some instances, great sinuses form and burrow along the course of the perineum or extend into the buttocks for six or eight inches. It must be borne in mind, however, that though there be several sinuses and fistula in the structures surrounding the anus, there will generally be but one communication with the mucous surface of the bowel, and it will be found near the anus. This is a fortunate circumstance, for if several of the deep channels formed connections with the gut at their distal extremities, the process of treatment would be difficult and dangerous. Erroneous impressions in regard to the depth of fistulous communications with the bowel have led to unfortunate divisions of the sphincter muscles. The longest fistulous tracks usually terminate in pouches among the loose adipose tissues of the gluteal regions, and early penetrate to the muscular layers. Indurated tracks in the vicinity of the anus, though impervious to a probe, are to be regarded as distinctive marks of fistulous disease. Left to themselves, they degenerate into pus-secreting pipes, and communicate with the anus, vagina, urethra, or some fistulous canal near by. Attempts to cure a branch of the main channel, without destroying all the ramifications and hardened masses would result in failure. And unless the general health be attended to in patients suffering from fistulous disease arising from constitutional causes, there is slender prospect of a local cure remaining permanent. In cases of doubt in regard to the extent of the disease it is well to ask the patient whether flatus has been felt to escape through the fistulous track. It has been recommended to inject the morbid pipe with ink or milk and watch the appearance of these fluids in the anus to discover whether the fistula was complete or not, but the patient's knowledge of the passage of fecal matter or the escape of intestinal gas, is more reliable than the above experiment. Some tact is required in exploring extraneous passages about the anus. The probe can generally be made to enter and follow along the course of the main channels, but unless bent and skillfully manipulated, it will not find its way to the bowel near the anus, and into the morbid sinuosities. In seeking the anal termination of a fistulous pipe, a finger should be carried into the rectum to meet the probe. The thin walls of the bowel intervening between the finger and probe, are not to be disturbed above the sphincters, but the communication is to be sought among the anal folds.

The parts are often so sensitive that the diseased channels can not be well explored until the patient is put under the influence of chloroform. Large probes, or even a common grooved director can then be pushed along the diseased tracks. Once under the anæsthetic influence, the patient can be thoroughly examined and operated upon before sensation is restored.

There are two principal methods of treating anal fistula. The nature of the case, or the patient's choice, generally determines which course is to be adopted. The plan of cutting through the fistula and whatever sound tissue intervenes, is the quickest and least liable to failure. But a case which comes from a distance to be treated, and can be seen by the surgeon but once, is perhaps surest of a favorable result from the action of a ligature passed through the fistulous track. This plan of treatment is less dreaded by the patient, and may need less skill in the general management. The thread or ligature, by means of a long, curved, or flexible needle, is carried into the external fistulous opening and along the morbid track to the anus, and is there brought out and tied loosely in a loop, or firmly over a button, cork or piece of bougie. The slender cord will ulcerate through the included tissues in a few days or weeks at most, and the divided track or wound will granulate and heal after it. While the noose is being disengaged by this ulcerative process the patient can be taking alterative or other remedies presumed to correct the constitutional vice which may have caused the fistulous disease. The process of cure by this method is necessarily tedious, and unless several ligatures be employed in complicated cases, some branch or sinus may remain untouched. A cure could not be expected unless every pipe and indurated mass was destroyed.

The incisive method consists in carrying a bistoury through the fistulous track, and dividing all the tissues the knife meets on its way out. The finger or a gorget is usually carried into the anus to meet and cover the point of the knife while dividing a complete fistula. Sinuses and blind or incomplete fistula burrowing in the perineum or the loose structures of the nates can generally be entered with a common director, and then slit open without danger from hemorrhage or other complications. Any branches or pouches that may exist, need laying open. In dividing complete fistula, or those which communicate with the bowel, it is sometimes necessary to cut through the whole or part of the sphincter muscles. Such a division would temporarily impair the "anal grip," but no serious consequences ought to arise. The sphincter muscles will reunite as readily as others, if the incised surface be kept in a healing condition. Wounds made by incisions for the cure of fistula need more than ordinary attention, for the intestinal fluids, and the secretions of the fistulous surfaces, tend to retard the agglutination of the divided parts.

A wash made as follows, and applied twice a day on a pledget of lint, will excite and sustain the granular process: ℞. Water, f℥, iv; chloride of zinc, grs. viii; muriatic acid, gtts. vii; M. Any tendency at the extremities of the wound to bridge over, or to leave pockets or pouches must be thwarted by the free use of the knife from time to time. Half organized, cheesy masses that sometimes form along the course of the incision, should be destroyed with the following escharotic: ℞. Chloride zinc, ʒii; pulv. blood root, grs. vi; pulv. acacia, grs. iv; Mix, using a few drops of water to form a soft paste. One application commonly suffices to destroy all useless growths, and to establish a healthy reparative action.

Constitutional remedies should be employed early in the course of treatment. Cod liver oil is one of the best alteratives and restoratives to be employed in the cure of fistulous diseases. The phosphites, and iodides do well; sulphur, iron and vegetable tonics are not to be neglected, and if the patient can have sea voyages, or change of climate, a permanent cure may be reasonably expected.]—*H. J. Howe.*

LECTURE XXXV.

DISEASES OF THE ANUS AND RECTUM, CONTINUED—PILES, PROLAPSUS, FISSURE AND STRICTURE.

HÆMORRHOIDS or *Piles*—Meaning and use of words—Treatment when inflamed—Evacuants—Soothing applications—Various salves—Hard cases—Ligature preferred to excision—Directions for applying—Case.

PROLAPSUS ANI—Mode of procedure in replacement—Precautions against relapse—Uses of linseed oil.

FISSURE OF THE ANUS AND RECTUM—Trouble, danger—To be cured by perseverance.

STRICTURE OF THE RECTUM—A self-protecting "effort of nature"—Causes, constipation and purgatives—Directions for making and using the *Dilator*—Concomitant and subsequent measures.

PILES OR HÆMORRHOIDS.

THESE words are used indiscriminately to express the same affection—or, rather, several connected affections of the same part; though the prominent idea conveyed by the popular term is that of *tumor*, and by the more learned expression, that of *bleeding.*

SWELLING and BLEEDING *at* the anus are both common affections, very generally occurring in the same individual, and obviously connected—often as cause and effect, directly or *inversely.* Either symptom may exist, however, without the other. Tumors which do not bleed are distinguished as "*blind* Piles"—such are out of sight within the anus. These internal piles are often of considerable dimensions, because not so liable to burst as the external, which are often called "Bleeding" or "Open Piles."

A person is also said to have piles who is troubled with hæmorrhage about the extremity of the rectum, though unconnected with any sensible swelling there, transient or permanent; and tumors or occasional tumefactions occurring there, are spoken of as hæmorrhoids, whether they are known to relieve themselves by bleeding or not.

The veins of this part are themselves called *hæmorrhoidal,* from their great liability to become engorged and discharge their contents. This liability is occasioned by the anatomical peculiarities as well as the physiological changes of the connected parts. Over distension by costiveness impeding the venous flow, followed as it is by excessive relaxation on the rectum being suddenly evacuated, is, no doubt, the most frequent cause. Torpidity of the liver, by delaying the return of the portal blood, may be one of the causes. Costiveness may be an *effect* as well as cause of piles, the patient suffering so much from soreness of the rectum that he is disposed to neglect the calls of nature.

The temporary distension or permanent varicose condition of these veins, may be the only tumors in the case; or they may themselves be transformed into real tumors, or their extravasated blood become inclosed in permanent cysts.

These tumors are from the size of a pea to that of a hen's egg, and may be very numerous. When small and few in number, they may exist a long time without serious inconvenience—and be, of course, neglected. Their becoming painful is often an advantage to the patient. Besides the obvious danger of excessive *hæmorrhage* (from which several distinguished men are said to have died) long neglected piles may excite *inflammation* of the neighboring organs, or by immediate ulceration occasion *fistula* (as was noticed in the last lecture.)

In the TREATMENT of this disease, almost everything depends upon the general health. A torpid condition of the liver and derangement of the whole digestive system is a very general attendant. Hardened fæces impeding the return of blood from the part has been regarded as *the* cause.

At times the tumors and whole anus will become externally inflamed. In such a case, evacuate the bowels freely. This is generally best done by some medicine that has a specific action on the liver, in combination with a hydragogue, so as to produce effective but thin discharges that will not irritate the rectum. Small doses of podophyllin, from one-eighth to a quarter of a grain, taken every two hours for six or eight hours, and then followed up with from ʒss to ʒj of our common purge (Form. No. 3) will generally have the desired effect.

After the evacuation, or even before, if the pain and inflammation be severe, the local application of tobacco will have a good effect. Take a piece of the pressed article finely cut, or a cigar; moisten it in warm water and let it be pressed up the rectum in contact with the tumors, and confined there by a "T" bandage. This measure will almost invariably give temporary relief. In some instances, the application may cause a little nausea. This is not generally of much consequence. Should it, however, go to the extent of vomiting, or much nervous depression, the "plug" should be at once removed.

For constant use, let a *salve* be made of the extracts of stramonium and tobacco, aa ʒj and Tannin, gr. v. Let this be applied three or four times a day so as to come in contact with every tumor. It is well also to have it spread and kept on permanently during the night. Should there be much tendency to *hæmorrhage,* increase the proportion of tannin.

A salve made of the Ambrosia elatior (Roman wormwood—green, bruised and simmered with spirits and cream) will frequently relieve this distressing affection and discuss very hardened tumors of long standing—provided the bowels be kept regular. No treatment can be depended on if this precaution is neglected. If costiveness be allowed to return, before the cure is complete, the local difficulty will be brought on again.

Other salves that have been highly recommended are made of the Wild indigo (Baptisia tinctoria) and the Celandine, (Chelidonium majus.) But I have had better success with the three articles first named, than any others I have tried, and they have been many; nor have I ever seen any bad effects result from the tobacco combined and used as directed.

Cold water is generally a good palliative.

The patient should be directed to take regularly of the Alterative Syrup, with from one-eighth to one-half of a grain of podophyllin every night.

This simple treatment will remove all recent cases. But in some instances of *long standing*, the

Piles have become hardened and callous. In this stage they are nearly insensible unless when inflamed. I have been called on to treat many such chronic cases in which the tumors wore a very malignant appearance, and had already occasioned ulceration to a very considerable extent. The course of treatment which has been successful in every such case, is this:

Place a ligature round the tumor, or round two or three if there are many, passing it through a cork, as recommended in the case of fistula in ano, tightening it every day, till the strangulated tumors slough off. The patient meantime should constantly keep on a slippery elm poultice; and rest as still as possible—the bowels being loosened by small portions of hydragogue physic (For. No. 3).

The best *mode* of tying, is to have the patient *strain* down the tumor, over which the silk or linen cord is put as a *loop*, having been *previously* passed through the cork. Dr. Physick's method was to make use of a *wire* instead of a flexible string, passing both ends through a double canula, one being fast to its ring, the other drawn tight and then fixed. The wire was kept on till the tumor turned black.

After the tumors have come away, the salve recommended for milder cases may be applied.

The *ligature*, as a means of removing large hæmorrhoidal tumors, is far preferable to the *knife*. It is not so alarming to the patient and gives him no pain except on the first application, and for a few moments after each tightening. It avoids all the danger of inflammation, and the still greater danger of hæmorrhage. The books are full of instances where patients have sunk under or immediately after the operation.

The disease rarely *returns* after removal by ligature, even though the patient should neglect himself and become costive. But I wish you to bear in mind that no mode of local treatment—at least none short of this operation by ligature—will effect more than temporary relief, unless proper constitutional remedies are at the same time applied.

I have treated several cases which had been of many years standing, with very large and numerous tumors, all of which had been before subjected to other treatment without anything more than temporary relief. In one instance, on placing the patient on his hands and knees, and directing him to strain, a mass of tumors was thrown out on one side of the anus as large as a goose egg, while several smaller ones appeared on the opposite side. In this large mass were several sinuses, from which issued a considerable quantity of thin yellowish matter. The whole tumor was of a dark purple color and extremely tender to the touch. I applied a ligature around the largest one, by means of the cork and loop, as before advised; and although it gave extreme pain, I drew it down with great force and secured it. A large slippery elm poultice was applied (as should be done in all cases to prevent excessive inflammation). The patient soon became easy, and suffered but little pain on subsequent tightening, which was done every day. In a week the ugly mass came away and all the other tumors disappeared. The patient was entirely cured of a difficulty under which he had been laboring for twenty years. Generally the tumors are smaller and will slough off sooner than this did.

Treatment.—In the case of external hæmorrhoids, we may sometimes succeed in removing them by the use of astringents, as a saturated solution of Tannic acid, or what is better, a solution of Persulphate of Iron; or sometimes the local application of cold, as ice, or ice water. A much better plan, and one that is without danger, and certain in its results, is to make an incision into the tumor, and turn out its contents. The patient should be kept quiet, for two or three days, and a cold compress applied, the part usually healing kindly. Studying the anatomy of this form of hæmorrhoids, it will be readily seen why this is the best treatment, and one applicable in all cases. If much hæmorrhage should occur, it may be controlled by pressure, or an injection of a solution of Perchloride of Iron into the opening. Under no circumstances must this treatment be used in cases of internal piles, as they being extremely vascular, the patient's life would be endangered from hemorrhage.

It will be recollected that the hæmorrhoidal veins entering into the formation of internal hæmorrhoids are the most dependent parts of the portal system: this is the reason why the tumors should be so intimately associated with derangement of the intestinal canal. As a general rule, it may be stated, that internal hæmorrhoids are almost invariably caused by derangement of those organs, and that this is a continuously acting cause, no matter how long the disease has lasted. Hence the importance of means for removing congestion of the intestinal circulation, stimulating the liver to normal action, and overcoming constipation.

Many cases of hæmorrhoids may be cured by appropriate internal treatment. Thus, in cases of sluggish action of the bowels and liver, which in a large majority of cases is an attendant, I direct Sulphur Subl., ʒij; Podophyllin, gr. v; extract of Leptandra, gr. xx; Phosphate of Soda, ℥ss; mix and divide into twenty powders, of which one may be taken morning and night; or it may be made into a lozenge, by the addition of Gum Arabic and Simple syrup; or united with Simple syrup and Honey, may be taken as a conserve. Another very good formula, is ℞. Podophyllin, gr. x; Extract of Nux Vomica, gr. iij; Extract of Leptandra, ʒj; Extract of Hyoscyamus, ℥ss; M., and make forty pills, of which one may be taken morning and night, if necessary; or equal parts of the Extracts of Podophyllum, Hydrastis, Leptandra, Apocynin and Xanthoxylum, made into pills of usual size, and taken morning and night, also answer a good purpose. It will seen that the object of this treatment is to stimulate the bowels to action, and get free circulation from the portal veins, thus relieving hæmorrhoidal congestion. The Convallaria, chewed and swallowed frequently through the day, or taken in infusion is sometimes of great assistance. A very essential part of the treatment is to restore the skin to its normal condition, by the use of appropriate baths and friction. If, as is usually the case, there is relaxation of the perineal structures, use the Salt hip bath, with thorough rubbing of the lower portion of the abdomen, pelvis and thighs; this bath should be used cold if possible. Other means that would seem to be indicated, by the condition of the patient, should be employed as it is essential to obtain the best possible general health.

As a local application, nothing is better in a great number of cases than an injection of ice-cold water, in small quantity, or its application if the piles are extruded. In some cases when they were down, forming a large mass impossible of replacement, I have used powdered ice and salt in a bladder, carefully applied, so as not to produce sloughing of the entire tumor, with the most marked relief from suffering, and rapid diminution of the tumors. In one case the application being left to the care of the nurse and patient, they continued it until the entire mass (nearly as large as a goose egg) was completely frozen; it sloughed off by the fourth day, the patient recovering without trouble, and not having since had the slightest return of the malady; though successful in this case, I should not like to repeat the remedy. The vegetable astringents are frequently used and with advantage in mild cases, as ℞. Tannic Acid, ʒij; Morphia Sulph., gr. v; Adeps, ℥ij; M., to be applied to the tumors, two or three times daily. Or Nut Galls, ʒij; Opium, Camphor Acetate, of Lead, āā, ℥ss; Lard, ℥j; mix thoroughly and anoint the hæmorrhoids two or three times a day. Tobacco has been employed in these cases, and sometimes with marked advantage; it may be used in various ways; the common plug, or a cigar may be wet and softened and introduced into the rectum; or a strong infusion may be applied to the tumors; or it may be used in the form of an ointment, as ℞. Tobacco, Stramonium, āā, ℥j; freely pulverized and mix thoroughly with Lard, ℥ij.

Among the most efficient means I have used, is the solution of Persulphate of Iron, applied to the tumor with a camel's hair pencil. In some cases it may be used in full strength, in others it will have to be diluted with from one to two parts of water.

[The Hamamelis Virginiaca or witch hazel, has proven very serviceable in the treatment of this disease. I prefer Pond's extract, although the common or essential tincture will answer. Give the patient from ten to fifteen drops of the extract three times a day; and direct an application to the hemorrhoids of one part to three of water. If the piles do not come down, let the remedy be used as an injection two or three times daily.]

Prolapsus Ani

Often exists in connection with piles, especially the variety distinguished as Bleeding Piles. It doubtless often precedes and causes both varieties.

A similar *constitutional* TREATMENT is generally required to that recommended for piles, though it may not often be necessary to carry it out so fully or so long.

When called to a case, if the prolapse be present, the first thing to be done is to *replace* the protruded bowel, so as to prevent any longer exposure to air and other irritating causes. In ordinary cases the patient can do this for himself. The swelling, however, may be so great that immediate replacement is impossible or unsafe. In such an event subject the part to the Bitter Herb Fomentation. This will generally produce such a softening and diminution, as to render the return of the part quite easy. If not, apply the ointment prescribed for piles, and then cover with a slippery elm poultice. After these various means have sufficiently allayed the irritation and substituted a relaxed condition,

Place the patient on his knees, with his hips elevated and head down, and grasp the tumor with a cloth wet in warm water in your hand, gradually compressing and pushing it back with your fingers.

After such an occurrence, the patient should be kept very still for a day or two. If he gets up at all, he should wear a "T" bandage, with a compress on the anus.

For some time to come, the rectum should be every day washed out and invigorated by a cold water injection. The bowels can be kept sufficiently loose by the cathartic (Form. No. 3), without giving enough to debilitate.

After a day or two, when the irritation from the accident has sufficiently subsided, a strong decoction of white-oak bark should be used in alternation with the cold water injection. If needful, a solution of tannin (two grains to the ounce), mixed with cream, may also be applied.

The general health and *strength* must be sustained.

As a precaution against a recurrence of the difficulty, the patient should be advised, on going to stool, not to sit with the anus lower than the knees, but to keep the thighs at right angles with the body. His own sense ought to teach the propriety of not compressing the abdominal muscles or straining too hard.

I will here take occasion to recommend the use of Linseed oil as an aperient. In cases like that under consideration, it is decidedly the best I have ever seen used. It may be given to adults in doses of from one to two table-spoonfuls. If it should be found to produce pain or griping, a few drops of oil of anise or sassafras will prevent that objection—to which, by the way, it is not so liable as Castor oil.

I have found, also, that lubricating the rectum by an injection of Linseed oil, just before an evacuation of the bowels, may prevent the recurrence of prolapsus.

Fissure of the Anus.

This, as the name implies, is a crack or groove in the rectum, extending up from the orifice, sometimes more than two inches. It is very irritable and tender to the touch, though the edges become thickened and hardened. A sanious fluid is continually exuding.

This affection is as distressing to the patient, as dangerous to health, and not unfrequently as hard to cure as fistula at the same place.

The TREATMENT is conducted on the same general principles as that of FISTULA IN ANO, and the mild caustic is here, also, the principal agent.

Frequently inject with the caustic solutions, and fill up the crevice with lint holding the dry powder, pressing it with the probe till it is filled.

The parts should be subjected to the Bitter Herb Fomentation once or twice a day, and a slippery elm poultice kept on between the dressings.

These applications are to be continued until all hardness about the fissure has disappeared. Suppuration will very soon bring about this change, when the parts will assume a healthy appearance and commence healing.

As the healing process goes on, the patient should be kept rather quiet, the bowels loose, and the general health attended to, the same as in fistula.

The CURE is sometimes *tedious*. A sufficient application of the caustic may have to be deferred, in consequence of the state of the patient's nervous system. If he can bear frequent applications, the case will rapidly progress, and he may be cured in from four to eight weeks. A much longer period will be required when you can not make a powerful impression oftener than once in three or four days. In such cases, you should still have recourse to a weak alkaline solution during the intervals, or at least to soapsuds.

[In the treatment of fissure of the rectum, I prefer incision to all other methods. Expose the fissure with the speculum, and, with a sharp bistoury, slightly incise the bottom of the fissure. The incision, in no case, must be deep—simply scarifying the bottom; but, if of long standing, it is well also to trim its edges.]

STRICTURE OF THE RECTUM.

This is a very troublesome, and often a very serious disease. The obstruction comes on gradually, and much harm is often done, as well as valuable time lost, by its being confounded with *constipation.* This is indeed its common but remote cause; and temporary removal of the cause can not undo the lasting effect. The ordinary means resorted to, moreover, as a remedy for costiveness, are but too likely to insure a return and continuance of it.

Persons who lead sedentary lives, and neglect the calls of nature, are by far the most liable to stricture. The fæces being habitually retained by a forced action of the sphincter, accumulate in large quantities and distend the greater part of the rectum, while the extremity is firmly contracted. Under these circumstances, the thickening and hardening of the gut is but a protection on the part of nature against the unnatural burden.

In some instances, the rectum becomes diminished in its caliber, thickening, to the extent of several inches. More frequently, however, a small callous ring is formed round the bowel, just within the anus, of not more than a quarter or half an inch in width. The difficulty may indeed occur in any other part of the bowel, but is almost always limited to the space between the anus and the prostate gland.

The SYMPTOMS are sometimes difficult to determine, the patient being seldom able to describe his sensations with sufficient exactness. He experiences a difficulty in evacuating his bowels, and is obliged to use considerable straining, although the fæces appear not to be unnaturally hard. Still the obstruction continues, the passage growing constantly smaller; and the fecal matter at last passes off in a fine stream. The swelling being sometimes larger at opposite sides, the discharge takes a thin, flat, tape-like form. This happens after the stricture is well established.

An obstruction may sometimes occur without any thickening in the rectum itself, in consequence of an enlarged prostate gland. When this is the case, the fæces will present an indentation or groove on one side only, produced by projection of the gland into the gut.

In cases brought on by sedentary habits, the fæces, in the earliest stage of the disease, will pass off in a bulky mass at the first—after a great effort, the latter part of the discharge becoming small and contracted.

The TREATMENT is the same, whether the contraction be very great or only slight. The stricture must be overcome. The passage must be enlarged by a bougie, while the bowels are kept regular by aperients or injections.

The *bougie* should be a piece of wood (or other suitable material) of a conical shape, and about three inches in length. The smaller end should be just large enough to pass the stricture easily, while the larger should be sufficient to complete the dilation, or about one and three-quarters or two inches in diameter. If made of any ordinary wood, it should be covered with oiled silk; if of hard wood, like lignum vitæ, polishing and oiling may be sufficient. A glass bougie would be better than any other, but some patients object to the weight of it. The same objection applies to the lignum vitæ. Whatever material is used, it should be lubricated with olive oil.

Insert this *dilator* past the strait, and fasten it in that position by a "T" bandage, requiring the patient to keep it on as long as he can bear it. The bandage should be made of gum elastic, so as to cause a slight but constant upward pressure on the instrument.

Extract of Stramonium and Belladonna should be frequently applied, in connection with the mechanical means of dilation. It would be well, also, to make use of fomentations and emollient ointments previous to the introduction of the instrument. In some instances, the thickened parts are hard and *callous*, and will not yield to mere pressure and relaxants. Recourse must then be had to the sesqui-carbonate of potash. A strong solution should be used as a lotion once or twice a day, and the lower part of the rectum well loaded with tents in which the dry powder is involved. The patient must keep quiet, and in the horizontal posture. Care should be observed, however, not to carry these applications so far, or continue them so long, as to risk the production of inflammation—that is, any more than is required for the purulent discharge from the morbid growths, which are always more easily destroyed than sound originally organized parts.

The destruction of callosity by the suppurative process must be kept up by repetitions of the caustics, as fast and as strong as the neighboring parts will permit, till there is no more to destroy. At every dressing the rectum should be thoroughly washed out with warm water injections, in order to dislodge any particles of fecal matter that may be adhering to the parts.

The importance of keeping the *bowels regular* throughout the whole treatment, must never be lost sight of.

The *cutaneous excretions* are also of an importance scarcely secondary to those of the bowels.

You may continue the application of the *bougie* occasionally during the caustic treatment, provided the parts are not too irritable.

I have derived great advantage, in these cases, from an Irritating Plaster over the sacral and lower lumbar regions. On whatever principle it may be explained, I am satisfied of its value: I know that cases which had before resisted treatment, have readily yielded to a repetition of the *same measures*, in connection with the plaster. Indeed I have no hesitation in recommending its application in almost all varieties of rectal diseases.

LECTURE XXXVI.

STRICTURE OF THE URETHRA, URINARY FISTULA, AND DISEASES OF THE PROSTATE GLAND.

Stricture of the Urethra—Retention and suppression of Urine—Spasmodic and permanent—Stricture—Causes and progress—Antispasmodic means—Absorption—Dilatation—Cauterization—Revulsion—Artificial blenorrhea.

Fistula in Perineo—Mechanical cause and condition of cure—other means and precautions.

Acute Prostitis—Cause and symptoms—Efficient relaxing and anti-phlogistic measures—Connection with gonorrhea, or its "cure."

Chronic Prostitis or Enlargement—Cause and liability—Symptoms—Revulsion to perineum and *urethra*—Artificial gonorrhea.

Stricture of the Urethra.

This is a very common and very important subject. The number of men who die from neglect or mal-treatment of this originally simple affection, would surprise the profession, as well as the general public, were there, as there *should* be, any means of ascertaining the point and making it a settled matter of fact instead of opinion. "Bills of mortality" are the final test of all medical practice, and should be made use of for its correction and perfection.

Retention of urine, caused by stricture, gravel or other similar *mechanical* impediments, must not be confounded with suppression, which always implies inactivity and disease of the *kidneys*. This fatal affection, however, may be a result of the former. When the retention, or mere "stoppage of water," is complete, occasioning immediate danger or inconvenience, the first measure should be, of course, relief by the catheter. In such a case, the distended bladder can be felt as a tense, round tumor above the pubes; and unless it be relieved of its burden (by relaxation of the spasm, if that be the cause, by the giving way of the urethra behind the point of obstruction, causing fistula in perineo, or by art as directed), it may finally burst into the peritoneum.

The membranous portion of the urethra, between the bulb and the prostate gland, is the part most liable to be strictured;

but the accident or disease may occur at any point between the bladder and the glans penis. The closure of the urethra may be either sudden and temporary, or gradual and permanent; or there may be a constant *partial* stricture, aggravated or made complete by spasmodic action.

In the merely SPASMODIC STRICTURE, there is no diminution of the caliber of the urethra, but a temporary obliteration of it from the sides being pressed together by contraction of the surrounding muscular fibers. The irritation occasioning this may be in the mucous membrane, where it is often caused by gonorrhea. When the urine reaches the irritable spot, or after a small amount has passed it, the irritation is communicated to the muscular tissue, and the closure ensues. The patient has to urinate very frequently, and is generally in a great hurry about it—the stream coming with force and entire freedom for a few seconds, and then *suddenly* stopping. The difficulty may be experienced in coitus as well as in urination; the semen being unable to advance through the urethra, or to return into the ductus ejacalutorii, is driven backward into the bladder where it remains until that vessel can discharge itself. The irritability of the part will, of course, be greater at some times than others. A greater or less liability to this sort of inconvenience may continue for many years, without any material change; but, generally, the functional will induce organic disease—the "spasmodic" will occasion "permanent stricture"—by the thickening of the coats of the urethra, and diminution or obliteration of its channel. Sometimes the morbid irritability continues after the thickening, so that the stream of urine, when it passes, is both small and interrupted. As the thickening progresses,

In the *Organic* or PERMANENT form of STRICTURE, the patient first notices that the urine does not pass out straight; and then, that the stream diminishes; and at length, when he attempts to force it off more quickly, becomes branched. The channel may continue to diminish until the urine can only pass in drops. That excretion itself changes its appearance, from too long retention, generally becoming yellow; and sooner or later is mingled with pus, showing that the urethra or bladder has ulcerated. The urine may be so thickened that it will coagulate. As the bladder becomes more involved, the patient gradually sinks: frequent rigors come on, with more or less fever.

The ulceration may extend along the ureters to the kidneys, or those organs may first become more directly affected by their retained excretions and cease their depurative functions, when the brain soon becomes involved, and coma smoothes the way to death. Before this final result, other diseases may be induced, as hernia or piles, from the constant habit of straining.

The most frequent cause of stricture is, as I believe, gonorrhœa, or, rather, the fashionable "cure" of that fashionable disease. One distinguished Western surgeon is in the habit of accusing, and, as he says, of convicting, all his patients of this charge, however advanced they may be in life, or however respectable their standing in society. His experience, unfortunately, proves rather the prevalence of the sin than the invariability of the penalty. *Post hoc* is not always *propter hoc;* and most strictured men may have had gonorrhœa "cured" into them, without proving that it is necessarily *the* sole cause in their cases, much less that there is no other cause. From the analogy of stricture in other parts, we can easily see that whatever occasions frequent irritation, or keeps up a chronic inflammation of the part, is capable of the effect in question. In this case may be mentioned injuries by catheters, the passage of gravel, and even stone in the bladder. The absorption of the special irritant of the part from cantharides, applied for the purpose of vesication, must not be forgotten as a not unfrequent cause.

Treatment of the Spasmodic Variety.

Always, if possible, ascertain the *cause* and remove it. If it is *gonorrhœa* , still active, cure that affection in a *proper* manner (See Lecture XXXVIII). In a recent case of this kind, or one resulting from the poison of *cantharides*, or if from any cause there be, as there often will be,

Inflammatory Symptoms present, begin with bitter herb fomentations (see Introduction) and emollient poultices. Inject also into the urethra the mucilage of slippery elm or gum arabic. An excellent injection for such cases is a mixture of a solution of borax with the infusion of Hydrastis canadensis (about ʒij to ℥j of the solution). Insert this by means of a small syringe through a catheter pushed up to the point of constriction, and if possible, beyond it. (In which last event you will, of course, have first relieved the bladder.) If you attempt to inject with the syringe only, the spasmodic action will, in all probability, prevent throwing your lotion far enough up to do much good.

Let the patient drink freely of the *mucilaginous diuretics.* A strong infusion of the green leaves of mullein (Verbas. thap.) taken to the extent of a quart per day, although greatly increasing the amount of urine to be discharged, will make it of a kind quite soothing to the parts. In connection with this, the sweet spirits of niter may also do good, taken to the extent of from ʒj to ʒij, three or four times a day.

When there is rather an atonic condition of the parts with chronic inflammation, let the patient drink a strong infusion of the Liriodendron ulipifera and the Monarda punctatum. This, although somewhat stimulating to the parts, is by no means irritating, but the contrary. It may, besides, be combined or alternated with the niter and mullein. The odor of these articles may be detected in the urine, showing that they act as internal local applications. In the later stages of the disease, an infusion of the bark or berries of the common sumach (Rhus typhinum) may be taken with excellent effect. But, perhaps, the best of all means for merely allaying the irritability in this way, is a strong infusion of the Althæa officinalis. To realize the advantage of any mucilaginous diuretics, they must be taken diluted, in large quantities, and cool or but moderately warm (otherwise they will be apt to spend their force on the skin rather than the kidneys.)

[In severe cases of spasmodic stricture, I think the administration of diuretics very objectionable, as they simply increase the distension of the bladder and can not effect the stricture. Tincture of Gelseminum is my favorite remedy, and considerable experience enables me to say that it does exert a specific action on the disease. I usually order it as follows: ℞. Tincture of Gelseminum, Tincture of Lobelia aa ℥j, Simple Syrup ℥ij, a teaspoonful every hour until the desired result is attained, or the characteristic symptoms of the Gelseminum are produced. To assist its action in severe cases, throw into the rectum, ℞. Tinct. Gelseminum ʒj Tinct. Opium ʒij, water ℥iij, M.]

If, however, these means fail, the spasm not being relieved, or the irritability returning, recourse must be had to the same local means as in the—

TREATMENT OF PERMANENT STRICTURE.

In addition to some of the same diuretics, as in the former case, the patient should have an occasional *cathartic*. If there is, as often happens, some constitutional taint, prescribe such alteratives as suit the particular case. The syphilitic or mercurial taint will be a not unfrequent complication (see Lecture XXXVIII).

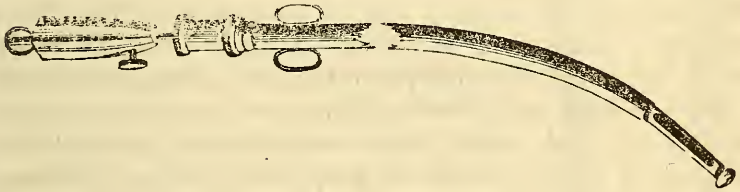
The common mode of relieving this condition is purely mechanical; the urethra is stretched wider by means of *bougies*. These should be very smooth and well lubricated before being used. The best material for them is gum elastic or gutta percha. It may be necessary to begin with one so small that a common cat-gut fiddle-string will be the most suitable article. Substitute for this a larger one as the parts admit of a change, and that again for others, going gradually from No. 7 to No. 12, or even 16, of the regularly graduated bougies. Let each be kept in and worn constantly or as much of the time as possible, for a day or two before one of the next larger number is inserted.

This DILATATION of the urethra may succeed so far as to remedy the merely mechanical inconvenience for awhile, but it is by no means to be regarded as a cure for the *disease* of stricture. Enlarging the caliber of the urethra does not necessarily rectify the abnormal condition of the mucous membrane.

ABSORPTION may be promoted and a complete cure thus be effected. For this object it is generally necessary to stimulate the parts very highly. Sometimes you may have to carry it to the extent of actual inflammation, which can be prevented from going too far, by the proper applications, and will not unfrequently be followed by permanent restoration to a sound state. I have frequently injected the pure tincture of capsicum up to the prostate, and in some cases even into the bladder. When this last measure is necessary, it is best, in the first place, to throw up warm water or mucilage, so as partially to fill the bladder, that the stimulant may be more diluted there; and observe also to have the catheter you use as a couduit completely filled before the syringe, also filled, is accurately fitted to it: else air may get in and cause much pain and inconvenience. If this measure fail, or, in the first place, if thought preferable,

The stricture may be destroyed by the application of *caustic* directly to the part. The constricted part is generally very small. It may be but like a thread or ligature drawn around the urethra; or it may extend for from half an inch to an inch along its course—rarely more than that. There may be more or less obstruction at several points. The most convenient method of cauterizing any part of the urethra, is to use the modification of Lallemand's *porte-caustique* (Fig. 20). Some nitrate of silver is melted into the groove at the end of the movable rod, and scraped down smooth and round like the rest of its surface, so that it can be drawn back into the sheath. When the latter is inserted up nearly to the strictured point, the armed rod is pushed out, turned two or three times round, and sheathed again. This instrument can be used with perfect safety, the caustic being so effectually fixed in the notches at the ends of the groove, that it can not fall out, and so covered by the sheath when drawn back, that it can not touch other parts.

Fig. 20.



But I have had several cases that had undergone the whole course of treatment with this cautery, as well as the bougies, with but slight benefit; and have succeeded with them as with other cases, by different means.

As it regards cases caused by gonorrhea, my practice may require some defense or explanation. It has been known that such cases were sometimes unexpectedly cured by the re-establishment of gonorrhœa in the *natural* way. Taking this hint from nature, and reasoning from the analogy of chronic disease in the mucous membrane of the eye, and the effects of stimulants upon it, to that of urethra, I, about two years ago, determined on a new and peculiar course of treatment. My plan was, to re-establish a discharge from the parts, resembling, as near as possible, the original gonorrhœa; and necessarily accompanied, of course, with more or less of acute inflammation, as in that disease. I found the solution of the sesqui-carbonate of potash, injected by means of a syringe, through a catheter, answer this purpose effectually. When this lotion is used two or three times a day, it produces considerable irritation of the urethra and a discharge so nearly resembling a gonorrhœal one, that it would be mistaken for it by any person unacquainted with the actual exciting cause. The solution should be weak at first, and gradually increased to a saturated one, if the desired effect is not sooner produced.

If the bladder is at the same time involved in the disease, the injections should be carried up into it also; but in such a case, it is better first to inject warm water into the viscus, that the caustic solution may be more diluted there, than at the original seat of the disease.

This ARTIFICIAL BLENORRHŒA may be continued until the proper change is produced in the urethra. This may be known by discontinuing the caustic, at any time, for a few days, and using instead, a solution of hydrastis, in which borax is also dissolved, or a simple injection of cold water, with perhaps a little mucilage of slippery elm or gum arabic. Then if, on entering a bougie, any symptoms of stricture be still found, renew your caustic injections, until they are no longer necessary.

The saturated tincture of sanguinaria will produce the same effect as the mild potash, but is objectionable, inasmuch as it occasions a bloody as well as proper blenorrhœal discharge, and, for a time, even aggravates the stricture. A few applications, however, repeated every day or two, if the patient can be induced to submit to it, and followed up, first by the mild caustic, and then by soothing applications, will accomplish the cure more speedily than the caustic solutions alone.

I have since found this mode of treatment equally effectual in cases not caused by gonorrhœa.

If there is much *hardened thickening* of the MEMBRANOUS PORTION of the urethra—with or without an enlarged and otherwise diseased condition of the PROSTATE GLAND—the *Irritating Plaster* should be applied over the perineum, and worn as long as the patient can be induced to bear it. It may be necessary, in some cases, to apply the plaster several times, allowing the surface to heal in the interval; and, in other cases, only to substitute soothing applications for a day or two.

These cases of enlarged prostate are generally much more obstinate than any others, and frequently require a very long course of revulsive treatment with the Irritating Plaster, as I will proceed to show, in connection with other diseases of the same organ.

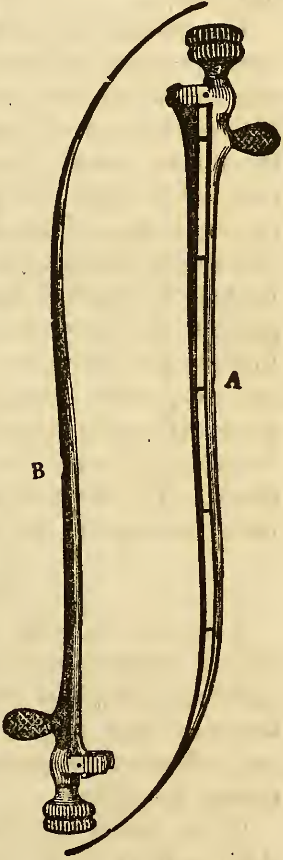
By the means here recommended, however, I have been able, so far, to relieve every case of stricture that has fallen into my hands; and the same course of treatment has proved successful in the hands of others.

[Stricture of the urethra has received much attention from surgeons in the last few years, and several kinds of instruments prepared for its speedy removal. The use of graduated bougies is safe and efficient in experienced hands; but the time required, and liability to relapse, cause us to seek for a better method. The caustic treatment is decidedly objectionable, as is any other plan for removal of the disease by establishing a discharge from the urethra.

To facilatate dilatation, we may use, first, Buchanan's Compound Catheter—which consists of a series of graduated tubes sliding one over the other. The smallest one being first carefully forced, one after another is slid over it as long as they can be forced. The operation being repeated every day, or every second or third day, until dilatation is complete. Mr. Bakely's apparatus acts on the same principle.

The operation of Mr. Barnard Holt, for forcible dilatation, has now attained considerable reputation, and, from the reports of those who have employed it, we are justified in considering it one of the best plans proposed. The instrument consists essentially of two steel blades, tapering to their extremity, when they become one, and the size of a small bougie. These blades are grooved on their proximate sides, and the groove contains a directing rod, over which the dilator slips. The dilators, of several sizes, are silver tubes, which pass over the guiding rod, and separate the blades

FIG. 21.



DILATOR FOR STRICTURES.

to any extent. In using this instrument, it is first carefully passed through the stricture—the patient being under the influence of chloroform—and then a tube, the full size necessary, is passed in, forcibly separating the blades and splitting the stricture. It is essential that the general health of the patient be good, and it is advised that quinine and opium be administered after the operation. Fig. 21 represents another form of the instrument.

The internal division of the stricture with the *urethrotome* I consider a very objectionable operation, and should not recommend it in any case, unless it was a stricture near the meatus. If the stricture is of long standing, and not readily amenable to the means named, I should recommend Symes' operation of external division. In performing this operation, the patient is placed in the position for lithotomy, and Symes' urethral staff introduced through the stricture. An external incision is then made in the median line of the perineum, the raphe serving as a guide to the instrument. Feeling for the staff, he carries his knife to the grove, and cuts through the indurated and constricted portion. As soon as the stricture is opened, a medium-sized catheter is introduced into the bladder, and retained for forty-eight hours, when it is removed, cleaned, and reintroduced. The external wound in this case is not large, and soon heals, leaving the urethra permeable.]

Fistula in Perineo.

A passage of urine into any part of the perineum is generally a consequence of urethral stricture. It is never a simple opening or artificial urethra. The discharge of so irritating a secretion into parts so lax, occasions extensive ulcers with very offensive suppuration. The case is so plain as to need no special description.

If the cause be stricture, that must be first attended to. After sufficiently dilating the urethra—or, in the first place, if no stricture exist—

A *gum-elastic* CATHETER, or, better still, one of *gutta percha* should be placed and *left* in the bladder. When this is constantly worn, as it should be, the patient can move about but little—which is all the better for his chance of successful treatment.

The ulcer thus protected should then be washed with the mild caustic solution, and may also require the application of the dry powder on lint. However, if there be *high inflammation*, the parts may be first subjected to the bitter herb fomentations (see Introduction), and other soothing applications.

If the edges of the ulcer be too hard and *callous* for the milder sesqui-carbonate, disorganize such growths completely with the pure potash, and apply emollient poultices until the eschar has sloughed off. Then follow up with the milder caustic, once or twice a day, still continuing the poultice.

When the ulcer assumes a smooth and healthy appearance—all callous or fistulous formation having disappeared, and the discharge considerably diminished—the poultice may be laid aside for the Black Salve (Form. No. 2), or some other simple dressing, accompanying it, perhaps, with still an occasional alkaline wash. This lotion may be weakened at each successive application. You must take care, however, to use it of such strength that the ulcer may *not* be allowed to become *indolent*. You need not fear that this caustic will prevent healing, even if the sore be peppered with the dry powder two or three times a week, and washed every day in the solution.

It is absolutely *essential* to successful treatment, that no more urine be allowed to get into the ulcerated parts. If the urethra or bladder should become so irritable, as not to allow of the catheter being constantly kept in place, the patient should *lie* as much of his time as possible *upon his back;* and as often as he is obliged to get up, the instrument may first be carefully introduced and the bladder completely emptied.

Such constitutional treatment must be added as the state of the patient indicates. In most cases the Alkaline Bath (See Introduction) will be advisable. The Restorative Bitters are also likely to be a fitting prescription (For. No. 7).

DISEASES OF THE PROSTATE GLAND.

ACUTE PROSTITIS

May be caused by external violence, but is much more frequently a result of gonorrhœa.

The SYMPTOMS are a sense of weight and a throbbing pain about the bladder; tenderness of the perineum and a tumefaction of the gland (which last can be best ascertained by examination *per rectum*). There are also frequent attempts to urinate, accompanied with violent pain.

The proper TREATMENT for this state is to place the patient over the Bitter Herb Vapor, or *foment* the parts by wrapping the Herbs in cloths; and to apply soothing mucilaginous *injections* through the urethra. Warm water thrown into the rectum also exerts a favorable influence. The pulverized roots of Inula helenium and Asclepias tuberosa, are peculiarly appropriate articles for fomentation, acting as powerful local antiphlogistics and anodynes.

Give the patient an active emetic, followed by a brisk cathartic, and subsequently by diaphoretics. Should further active measures be required, immerse your patient in the warm bath, or subject him to the "alcoholic sweat" (page 12). During the latter measure renew your fomentations to the perineum. Some such measures as these will generally cause the inflammation to subside in resolution.

Should the patient be altogether unable to *pass* his *urine*, a small gum elastic catheter may be used; though this is an operation which should be avoided if possible. In applying your slippery elm or other *mucilage*, push the catheter as far as can be done without causing pain, and inject through it.

Emollient poultices should be applied to the perineum for some time after the active symptoms have subsided. The patient should also be kept very quiet for several days. A poultice of the lobelia herb and stramonium leaves, applied to the perineum as warm as it can be borne, will frequently afford immediate relief. A poultice of poppy leaves or fomentations of hops may also be useful. Another poultice that has been known to have a powerful effect, is made by bruising onions in a mortar, and then moistening with warm water.

Almost any of these articles, applied frequently, in connection with emeto-catharsis and general perspiration, will give speedy relief, sometimes in the course of a few hours.

By far the most important general measure, next to evacuating the bowels, is the alcoholic sweat. In some instances great benefit will be derived from *long continued nausea.* Give our common emetic (For. No. 4) in small repeated doses, occasionally carrying it to the vomiting point. This brings about an equilibrium of the general circulation, while the anodyne effects of the lobelia and ictodes are very manifest. The extract of hyoscyamus may be often given with advantage, in doses of from one to three grains, repeated every two hours, so as to give twelve or fifteen grains in the course of twenty-four hours.

If GONORRHŒA be present, measures should be taken to "cure" this disease *constitutionally*. Better let it run on and run itself *out*, than merely stop it by astringent injections. No more certain means than these could be devised *for insuring* chronic and permanent disease of the prostate. The virus should be removed from the system, and not locked up in it.

Should the inflammation have advanced too far for resolution before you are called, the fact will be indicated by rigors and a considerable swelling of the perineum, soon followed by symptoms of acute inflammation of the external *surface*. In such a case as soon as you are satisfied that

Matter has formed, puncture *at once*, or open with caustic potash—lest the abscess extend and burst into the rectum or urethra, when the consequences may be serious and the cure difficult. After the matter has passed off, frequently wash out the abscess with soap and water; and if the patient's constitution be good it will soon heal. Gentle compression over the parts will aid the process.

If, however, the abscess open *into the urethra*, which will be known by the sudden discharge of pus through the latter, the urine should be drawn off by catheter, and slight compression made on the affected part until it heal. The better way, however, would be even then to puncture through the perineum, and evacuate the abscess, so as not to allow any more matter to pass through the urinary channel. The urethral wound will soon heal, if precautions are taken to prevent the further passage through it of pus or urine. This may be more effectually insured by the patient's constantly wearing the catheter, if he can bear it.

If the *abscess* has more of a *chronic character*, it is better to open with caustic; but when recent, with the lancet.

CHRONIC INFLAMMATION of the part in question is seldom the object of medical treatment or observation, except as it results in inconvenience from

ENLARGEMENT OF THE PROSTATE GLAND.

This is a not unfrequent disease, though comparatively little attended to in ordinary practice.

Although when it occurs in *young men*, gonorrhœa or its *mis-*

treatment may have been the original cause, it often comes on in *advanced life*, when there is no ground for such a suspicion.

The *gland* sometimes attains five or ten times its ordinary size. It is also much harder than natural. The middle lobe usually projects into the bladder, and alters the shape and direction of the urethra. It produces but a slight degree of disuria, but its diagnostic effect is that the bladder is never completely evacuated, and the *urine* rendered *turbid* in consequence.

The first SYMPTOM noticed will probably be a *difficulty* in passing urine, though the desire for it is more urgent and frequent. There is also a sense of *weight* in the perineum, which increases as does the obstruction. Finally, the patient is never able completely to evacuate the contents of the bladder. Total *retention of urine* is apt to occur occasionally, especially if the individual is addicted to excesses of any kind. The too long retention of the urine in the bladder may occasion calculous deposits.

The prostatic disease may go on until it extends to the bladder, ureters and all connected parts, producing abscesses, ulceration and death.

The TREATMENT consists mainly in revulsion by means of the Irritating Plaster applied to the perineum. Let it cover the whole space from the anus to the scrotum. Free *suppuration* should be kept up by this means for a month or six weeks. Remove the plaster for awhile and substitute emollient applications, whenever it may produce too much pain. If by the time mentioned, the swelling has not entirely disappeared, or been very much reduced,

Make a *caustic issue* immediately in front of the gland, and keep up a suppurative drain from it for a long time, by covering it with the Irritating Plaster, alternated when necessary with a poultice.

An additional measure of great efficacy is to establish or re-establish from the mucous membrane of the urethra, a discharge similar to that of gonorrhœa. This is done by

Filling the urethra with a strong solution of the mild caustic, through a silver catheter passed up to the neck of the bladder and gradually withdrawn, while the injection is being introduced. This is to be repeated two or three times a day until the suppuration is excited, and occasionally afterward; it is to be kept up for several weeks. Take care, however, before each caustic injection to nearly fill the bladder with warm water, mucilage of slippery elm, or gum arabic.

This artificial gonorrhœa is quite sure to cure the patient when his disease is only the result of "drying up a clap" too suddenly. It is a restoration of the original disease in order to have it really cured. If the prostatic affection proceed from other causes, this urethral drainage, though not so necessary, will still greatly facilitate its removal. The tincture or strong infusion of Sanguinaria may be used instead of the alkaline solution, but I have found it occasionally too irritating.

This is a course of treatment which I venture to recommend with perfect confidence, though it has not yet, to my knowledge, been prescribed for this disease by any other individual. I am induced to believe, from the results I have gained by it, that it will be successful in all those chronic cases of diseased prostate, where extensive disorganization has not already taken place, as well as in stricture of the urethra.

The general *health*, particularly that of the *general surface*, should not be neglected. An occasional laxative, if not cathartic, will be required. If the case is one of long standing, the Alterative Syrup (Form. No. 11) should be used—to which some would recommend the addition, as an absorbent, of the hydriodate of potash, in the proportion of ʒij or ʒiij to the quart.

LECTURE XXXVII.

SPERMATORRHŒA.

Importance of the seminal fluid and of the disease in question—Slight notice of it by medical writers generally—Various and anomalous symptoms—Particularly the nervous and mental—Difficulty and delicacy of various opinions—The physician's confessional—Causes independent of onanism—Nocturnal emissions—The analagous disease in females—Results, Insanity, Catalepsy, etc.—Condition and measures of treatment—Regimen, physical and moral—Refrigerants and antaphrodisiacs—Tonics, counter-irritants, etc.—Affections of the prostate and rectum—Case of ascarides—Great prevalence of Spermatorrhœa and its most common cause.

Under this head, I shall include all affections or symptoms connected with losses of the seminal fluid—whether they take place in a natural, artificial or involuntary way—that is, by excessive sexual intercourse, by masturbation or by spontaneous emissions.

The semen appears to be pre-eminently a vital fluid, and to have a very close connection with the nervous system; for the most disastrous consequences to that system, and all the functions more directly dependent on it, follow from any immoderate seminal discharges. If this take place in early life, it generally retards the *growth.* It always impairs the *mental faculties* and brings on *premature old age.* It manifests itself in very *serious affections*, presenting strange and anomalous features. Nosologically considered, it is a host in itself. The patient not unfrequently exhibits symptoms so many and multifarious, as to authorize the statement that he is suffering under the whole catalogue of human maladies. To enumerate precise symptoms would be like attempting an exact description of hysteria.

"Spermatorrhœa" is a new word in medical nomenclature. It is mentioned as a disease by few, if any, systematic writers. No standard author, certainly, whose work was published in America, prior to 1848, has noticed the subject in a manner calculated to arrest the attention of the practitioner; or to give him any correct knowledge of the disease or its symptoms. Some "medical authors" have even deprecated the idea of mentioning the subject at all! One work—an acknowledged text book in many of our colleges—thus speaks in regard to it: "It is certainly not very consistent with our national character to dilate so freely on a subject, which in a great majority of cases, can only be treated of as the result of the most degrading vice."

Notwithstanding the silence or slight indirect notices of our medical authorities, my attention was directed to this subject very early in my professional career. For four or five years previous to the republication in this country of Lallemand's work, I had been in the habit of noting down the principal symptoms of the cases that came before me; and from the materials thus gathered, I was enabled in the spring of 1846 to give my *first* full lecture on "spermatorrhœa" as a special disease. On obtaining a copy of Lallemand in 1848, I found all my most important conclusions confirmed. Some points, indeed, I had overlooked, while others, which I had noticed, were not mentioned by that author. On the whole, however, the views I had come to, agreed so well with the monograph of the French professor, that I had to make scarce any alterations, and but few additions; and I now address you from the same notes I originally drew up. The *treatment* I shall recommend is that which I have used from the beginning; I have seen no occasion to alter, except by adding that of the cautery in certain cases, and other improvements made in this country since that period.

Without attempting then to give any formal DESCRIPTION of the disease, or to divide it into varieties or stages, I shall tell you the SYMPTOMS of it as they have presented themselves to my notice. Though this may seem an unsystematic way of proceeding, I hope to enable you to discriminate the disease, when it shall, as it undoubtedly will, fall into your hands in every day practice.

In some cases the only complaint the patient will make, on consulting you, is, that he is suffering under a kind of *continual fever*. He will probably present a hot dry skin, with something of a hectic appearance. Though all the ordinary means of arresting such symptoms may have been tried, he is none the better.

Your patient will present *no* evidence of *organic disease.* His lungs are sound; and his liver appears to perform its office tolerably well. On strict inquiry, however, you will find that he is generally inclined to be *costive*—has probably been in the habit of taking some kind of aperient pills. *Dyspeptic* symptoms also are not uncommon, in connection with excessive *languor* and *debility.* The languid or tired feeling is especially manifest, with trembling of the limbs perhaps, on first rising from the bed in the morning.

The SLEEP seems to be irregular and unrefreshing—restlessness during the early part of the night, and, in the advanced stages of the disease, profuse sweats before morning. There is also frequent starting in the sleep, from disturbing dreams. The characteristic feature is that your patient almost always *dreams* of sexual intercourse. This is one of the earliest as well as most constant symptoms. When it occurs most frequently, it is apt to be accompanied with painful priapism. A *gleety discharge* from the uretha may also be frequently discovered, especially if the patient examine when at stool or after urinating. This may be more frequent with those who have had gonorrhœa, but is *by no means* confined to such.

Your patient may confess to being a very nervous subject. He has not only frequent attacks of nervous HEADACHE, but occasional sensations of giddiness, or *vertigo*, ringing in the ears, etc., with perhaps a fixed dull pain in the *back* of the head, where a preternatural heat may almost always be discovered. Connected with this will be a stiffness in the muscles of the *neck*, and darting pains through the forehead. Extensive SPINAL IRRITATION is a frequent accompaniment. Some patients will speak of a peculiar aura, like water running over the body, or a sensation resembling the crawling of insects under the skin, especially down the outside of the thighs. Weak *eyes* (as well as weak back) are among the common symptoms. But as might be expected from the direct implication of the nervous system, the MORAL and MENTAL SYMPTOMS are perhaps more to be relied on than any very obvious bodily peculiarities. The disease is well known to be one of the most frequent causes of insanity; and one of its earliest symptoms is incapacity for concentrated *attention.* If the sufferer attempt to pursue any mathematical study, he will fail. He manifests moreover an excessive *want of confidence* in his own abilities, even where they do not seem to fail him: he has very often "no mind of his own." He is much afflicted with awful *forebodings*, though he can not tell of what. Some indescribable evil is always about to befall him. In this and several other particulars, the disease very closely resembles *delirium tremens*. It may be confounded with *hypochondria*.

One very frequent and perhaps early symptom (especially in *young females*) is *solitariness*—a disposition to seclude themselves from society. Although they may be tolerably cheerful when in company, they choose rather to be alone.

The COUNTENANCE has often a gloomy and worn-down expression. The patient's friends frequently notice a great change. Large livid spots under the eyes is a common feature. Sudden flashes of heat may be noticed passing over the patient's face. He is liable also to palpitations. The pulse is very variable, generally too slow. Extreme *emaciation*, without any other assignable cause for it, may be set down as another very common symptom. If the evil has gone on for several years, there will be a *general* unhealthy appearance of a character so marked as to enable an experienced observer at once to detect the cause. In fact I recognize such a case at the first glance, as readily as a banker does a counterfeit bill. In the case of onanists, especially, there is a peculiar *rank odor* emitted from the body, by which they may be readily distinguished. One striking peculiarity of all these patients is, that they can not look a man in the face! Cowardice is constitutional with them.

Whenever you find any considerable number of these more prominent symptoms in the same person you may *suspect* the nature of the CAUSE. You may encounter difficulty, however, in your attempts to ascertain more. Much delicacy and circumspection are sometimes requisite. By some morbidly sensitive subjects, indirect questions will be *evaded* when their bearing is surmised, and a too abrupt charge *denied*. Your plan then is, after carefully comparing enough of the symptoms to give you a moral assurance, and otherwise securing your patient's confidence, to let him understand that you already *know* the nature of the difficulty, and that his life depends on your being allowed to know more—to know, indeed, all about it. At the same time he should appreciate the reciprocal obligations of such professional confidence, which are the same as between lawyer and client. Secrecy on your part is not less a duty than candor on his. The physician's *confessional* should be as sacred as the priest's. All sufferers will not be equally penitents, or ashamed of their weakness. To none, however, can you expect the subject to be a matter of the same *indifference* that it is, and *ought to be*, to you. You are to speak of it only as a disease, a misfortune—unless, perhaps, in the case of *continued* masturbation, when you are justified, in your said character of father-confessor, in using all *needful* severity of speech, and withholding all hope of absolution, i. e., of health, except on the condition of effectual repentance, i. e., of entire abandonment of the physiological sin, and implicit submisson to whatever *penance* may be enjoined in the way of medicine or regimen.

The original or *predisposing* CAUSE, moreover—and this ought, in mercy, to be always borne in mind—may have been, as the still *exciting* and perpetuating *cause* very generally is, some purely physical disease. Spermatorrhœa *may* be altogether unconnected with onanism, or anything the sufferer *ought* to be made ashamed of. It will, nevertheless, be always attended with many of the same characteristics. In moral judgments, as in legal, the doubt must be given in favor of the accused or suspected. The giving way in our own mind—and much more the giving currency from a mean love of depreciation—to the moral prejudice (i. e., *pre-judgment*), must be often as unjust to the individual concerned, as it is always in itself unjustifiable and *unprofessional.*

Four or five of these causes, or classes of causes, that may bring on the deplorable state of things, independently of masturbation, I will enumerate: 1st. Ascarides or other accidental sources of irritation in the rectum. 2d. Piles, fistula, or other diseases about the same part. 3d. Irritation or chronic inflammation in the prostate gland; or, 4th. The same state of things in the urethra itself (often, like the prostatic disease, a consequence of gonorrhœa); and, lastly, mere excess in *lawful* sexual indulgence.

On closer INQUIRY and EXAMINATION you will often find that "nocturnal pollutions" occur almost regularly. I have treated cases when they happened as often as five times in one night. Many will have the still worse symptom of "diurnal pollution"—most frequently in the shape of a constant discharge or dribbling of a mixed, or *muco-seminal* character. Soreness and enlargement of the *prostate* may often be detected. The best mode of examining the state of this important organ, is by introducing a finger into the rectum. In attempting to pass a bougie, the *urethra* will probably be found so irritable as to contract irresistibly upon it. The *bladder* may also be very irritable, necessitating a frequent discharge of its contents. The *penis* very generally shrinks up, in its relaxed state, much more than with other men; and in many cases, but not so frequently, the *testicles* have dwindled in size.

In FEMALES, this disease—or rather an analogous one brought on by masturbation—displays itself more in nervous symptoms and less in mere debility. "Spermatorrhœa" does not of course strictly apply to their case, or that of boys diseased by irritation of the genital organs before puberty. The injurious effect on their systems is independent of what in adult men appears to be the chief evil—loss of *the* vital or virile fluid. In both these cases, therefore, the ultimate danger to life is less. If the patient, however, is attacked by any common acute disease, it will prove more obstinate than under ordinary circumstances; and the practitioner may be much puzzled to know why his remedies fail of their wonted effect.

The female *onanist* is often "hysterical," adding another difficulty to the diagnosis and treatment of cases so called. I have been frequently called to such persons suffering under some slight and commonly manageable attack, which resisted all usual remedies. I have ascertained, too, that individuals confirmed in the destructive habit, will continue it even when confined to their beds by *other severe* diseases, or perhaps by its very consequences.

Insanity is a more common result to men than women, on account of the greater evil of "spermatorrhœa" proper.

Epilepsy and apoplexy are, also, not unfrequently terminations.

CATALEPSY, too, should be enumerated as a result. In fact, I am inclined to believe that a large proportion, if not all cases of this *mysterious* disease, are referable to the source under consideration. Four instances have fallen under my own observation; all of which showed conclusively, to my mind, that masturbation was their cause.

TREATMENT

Has to be both local and constitutional; and moral as well as medicinal, and perhaps mechanical.

First and foremost, if the practice of *self*-pollution is ascertained, it must be *abandoned* at once and forever. You must point out inevitable destruction as the consequence of its continuance; and encourage and strengthen the patient's resolution. You must not yourselves be discouraged at having to do this frequently. You have to bear in mind that your patient's memory is greatly enfeebled; and he will often find himself relapsing before he is aware of it.

Remove all CAUSES that are found to excite the genital organs, whether through the mind or body. All association with the opposite sex is sometimes interdicted; but the policy, as well as propriety, of this may well be questioned. The society of those whom we respect, is the surest means of strengthening self-respect and self-control. Lascivious books, pictures and conversation, are of course to be *denounced*—on medical grounds, which are here one with the moral.

Let the patient take as much EXERCISE as he can in the *open air*. It should, if possible, be of a kind that is profitable as well as pleasant, and such as will engage both mind and body as much as possible.

The tepid alkaline BATH should be used daily in alternation with the saline.

If *nocturnal emissions* are the great evil, direct the sufferer to avoid lying on his back. He often discovers for himself that he rarely escapes when asleep in this posture, and rarely has them in any other. That he may not turn over on his back while asleep, let him fasten something to his body that will prevent it or awaken him on the attempt, such as a hard ball upon the spine attached by a bandage.

The Diaphoretic Powder (For. No. 9)—to which it is well to add an equal quantity of pulverized camphor—should be taken, about a five grain dose, every night, if the patient be inclined to restlessness.

Let him also regularly take *tonics*. The Restorative Bitters (For. No. 7) will be good to begin with, changing them for others when the system gets accustomed to them. The Wine Bitters (For. No. 21) will be in some cases a good alternative, to which it may be well to add a portion of Cypripedium pubescens.

The bowels should be kept regular by small doses of Podophyllin. This article seems to have a special power in allaying irritation of the genital organs. But avoid active cathartics, especially the aloetic. In fact, these cases seldom need much evacuation—unless from the general surface, which the bathing and diaphoretics will secure.

As an *antiphrodisiac*, you can prescribe a strong infusion of the aments or catkins of the black willow (Salix nigra)—to be taken freely to the extent of a pint or more in the course of the twenty-four hours. I am informed by those who have tried it, that it frequently suppresses all sexual desire for several weeks. It is at the same time indicated in these cases as a general tonic. I have tried it in a few cases, and have found it to operate as described.

Apply the Irritating Plaster to the *loins*, so as to cover the two upper sacral and two lower lumbar vertebræ,* and keep it on as long as it can be borne. When it becomes so severe as to affect the general nervous system, the local diseased symptoms may for a time be augmented. Let the plaster be then removed, and the surface allowed gradually to heal.

If there be any soreness of the PROSTATE GLAND, on pressure through the perineum or rectum, let the whole perineum between the scrotum and anus be shaved, and covered with the Irritating plaster. If it has occasionally to be removed for a day or two, it should be reapplied in time to keep up a lively counter-irritation of the surface and a free purulent discharge.

A plaster should also be applied to the scrotum, composed of some such ingredients as our common Strengthening Plaster (For. No. 22) with the addition of as much finely pulverized *camphor* as can be incorporated into it. It should be spread on very soft leather, and renewed once in every eight or ten days.

This Camphorated Plaster should also be applied to the *spine* or *perineum*, after the removal of the Irritating application and the healing up of the surface; also constantly to the back of the *neck* and lower part of the *occiput*, extending round to the mastoid processes on both sides. If the patient object to wearing the plaster on this part, the occiput may be bathed every night in strong tincture of camphor, and a cloth wet with the same fastened on during the night.

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* Dr. Buchanan's Neurological experiments prove that this locality corresponds with the median portion of the cerebellum, and exercises a direct control over the genital functions. Both anatomy and pathology sanction this proposition.

In many cases the patient is so feeble or fickle-minded that you can not induce him to bear the Irritating Plaster long enough. You can then set up a pretty *extensive caustic issue* which, though not so good as the plaster, will very generally be successful.

Injections of borax and saleratus into the *urethra* (in the manner directed for gonorrhœa), will aid much in allaying the irritability of the adjacent parts. In the case of a female, let her use the same as a vaginal injection.

In nearly all cases, the irritating applications *to the perineum*, if persevered with for several weeks, will remove the disease of the prostate gland and urethra. If however, this fail,

Cauterization of the urethra may be resorted to. For this purpose it is best to have the instrument now generally used, which is a modification of Lallemand's instrument (the *porte-caustique*, Fig. 20, page 421). I have always succeeded without this operation, except in three cases, all of which yielded immediately to this mode of applying the caustic.

Simple pressure has been found an efficient remedy. Its efficacy in allaying chronic inflammation of other parts is well known. A pad is applied around the base of the penis so as to bear upon the seminal ducts, "with a silver jugum (yoke), encircling and removing all pressure from the private parts," and secured by a gum elastic strap passing over the body, before and behind, and over each shoulder, and buckled in front. According to Dr. Dixon, this is only necessary, in most cases, to be worn during the hours of sleep; and the more active forms of the disease will yield to it alone. With cauterization of the mouths of the seminal ducts, exercise in the open air and the douche bath, he concludes that almost every case may be restored.*

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* See the Scalpel, No. 6, for February, 1850. This writer restricts cauterization to the atonic or *passive* stage; and even then recommends tannin to be used in preference to the nitrate of silver. For the introduction of the tannin, a small bougie, coated with the article, may be pushed through the truncated end of a common silver catheter.

The foregoing measures are more especially applicable to cases arising from masturbation, sexual excesses, and diseases of the *prostate*. In cases arising from, or aggravated by

HÆMORRHOIDS, fistula or other affections of the RECTUM (and strict examination should always be made to ascertain whether such an influence is not in operation), such diseases or affections must be removed before any hope can be entertained of effectually curing the sexual derangement.

If ASCARIDES be the cause, they must be got rid of. The itching about the anus, which is the characteristic effect of this kind of worms, is worse at night, and apt to be aggravated by whatever overheats the body. During the day they will be felt most *hungry* and troublesome about two or three hours after the patient's usual times of eating, particularly after the morning meal, or about nine or ten o'clock.

I have adopted a different method against these mischievous parasites from that of Lallemand. His cold water injections answer a good purpose, but I have not found them sufficient. The course that has been most successful with me is this: I first direct the patient to take a pretty large dose of our common cathartic (For. No. 3), which will bring down copious watery discharges, evacuating the bowels with a rush, and carrying everything with it. I then administer a vermifuge preparation, composed of the oils of chenopodium and anise, turpentine and castor oil, in the proportion of an oz. of each of the three former, to 16 oz. of the latter. Give a table-spoonful of this, as soon as the cathartic has done operating. Repeat the vermifuge morning, noon and night. It will purge mildly. During the day the patient should take an injection of cold water as often as once in three hours, using a large syringe, and throwing up as much as possible. These measures will bring away the worms in large numbers. But to be more sure of ridding the system of them, on the morning of the third day repeat the cathartic, adding a portion of Podophyllum in substance, and keeping up the cold water injections.

It is well known to all that have attempted it, that this species of entozoa are very hard to dislodge. But by the process described I have made them *evacuate* their stronghold by myriads—armies of them—from a gill to a pint in mass; the patient never being infested by them again. One case I remember thus curing where the patient had been plagued with the worms, and spermatorrhœa as a consequence, for the previous fourteen years. Besides the ascarides, there were brought away in this case another sort of entozoa, from three-fourths to an inch in length, covered with stiff hairs, and so lively that they would coil up and skip in the manner of "cheese-skippers." They were examined by two physicians, and pronounced *uniques*.

SPERMATORRHŒA is a malady much more common than many seem to suppose. Married men are by no means to be presumed exempt. Whenever there are sufficient symptoms to indicate its existence, you should not be deterred from pursuing your investigations. When the affection is only slight or occasional, a moderate healthful indulgence of the sexual propensity is often beneficial. Hence marriage itself has often been prescribed as a remedy. Unwonted or excessive stimulus of the parts may, however, aggravate or bring back the disease. Moderation must always be enjoined, if not sometimes *total abstinence* for a time.

ONANISM (which is also to be itself regarded as a *disease*, whether it bring on spermatorrhœa, strictly so called, or not) is most deplorably prevalent. Both sexes, and it might almost be said all ages, are guilty of it or subject to it. It is to be regretted that parents and teachers are so generally ignorant or falsely delicate upon this subject. I am inclined to think also, that few physicians are fully informed upon it, or act up to their responsibility in taking proper opportunities to inform and caution others about it. Instances are met with of persons who have indulged in the vice, unchecked and scarcely suspecting any evil, from their earliest recollection. The practice often begins long before the age of puberty. One young lady of most respectable character and connections, whom I had to treat for it, informed me that she was subject to leucorrhœa when only nine years of age, and to distinct sexual desire before eleven—though her catamenia did not appear *before* she was twelve!

[A careful examination of the genital organs should be made to determine the existence of increased sensibility, and with a bougie to determine the existence of irritation of the urethra. In some cases the bowels should be kept open by a mild cathartic and the use of the cold water injection, thus removing a permanent cause of the irritation of those organs. In other cases we will find an irritation of the basfond of the bladder, with increased secretion of mucus, and large deposit of the triple-phosphate; this will continue the irritation of the sexual organs in spite of all remedies given for its control, and must be removed if we expect to effect a cure. It can usually be readily accomplished by the use of a tepid water injection into the bladder, sufficient to thoroughly wash it out, and, in bad cases, followed by an injection of Chloride of Zinc gr. j, Water ℥j, or the means named under the head of Cystitis. Occasionally the use of leeches to the perineum, or counter-irritation, or the warm sitz bath will relieve the increased sensibility. If, on passing the bougie, an irritable point is found, generally in the prostate portion of the urethra, it should be cauterized with Lallemand's Porte Caustique, the patient using the demulcent diuretics for some days afterward.

Internally, we frequently employ the Bromide of Potassium, in doses of from three to five grains four times a day, and if there is great irritability of the organs, with frequent erections, we may associate Camphor with it. Certain tonics seem to have an excellent influence in this disease, and as we have to employ agents of this class, we employ them. Cornus Florida, Collinsonia and Euonymus, seem to be especially applicable, and may be associated in the following manner: ℞. Essl. Tincture of Cornus, Collinsonia and Euonymus, āā, f℥j; Bromide of Potassium, ʒj; Glycerin, Simple Syrup, āā, ℥ij; mix, and give in teaspoonful doses four times a day. If the prostration is great, I usually employ the Nux Vomica and Quinia pill, as ℞. Extract of Nux Vomica, gr. v; Hydrastin, Quinia, āā, ʒss; mix, and make thirty pills, of which one may be taken three or four times a day. In some cases the use of Iron, or Cod-liver Oil, will prove advantageous; and should there be deposits of the lithates or oxalates in the urine, we may use the mineral acids as heretofore named.

It is necessary that the patient should have the disease so explained to him, that the morbid fear that is so frequently noticed shall be removed, and for this purpose we will try to gain the patient's implicit confidence. If this is not done, we will frequently find our remedies unavailing. The patient should be directed to take exercise in the open air, to use a daily bath, confine himself to a nutritious and not stimulating diet, and sleep on a hard bed. An entire abandonment of masturbation, and sexual excitement as far as possible is imperative, and he should likewise be cautioned not to let his thoughts turn to these subjects. There is no doubt but that the will can materially aid in controlling this unnatural excitation, and if possible it should be made to assist in the cure.

"The practice of onanism often engenders a want of confidence in young men, in regard to their ability to consummate the marriage contract. In fact it renders them sometimes temporarily impotent. I have repeatedly known this to be the case after the marriage had taken place, much to the annoyance both of the patient and the surgeon. In general, however, the defect is rather in the mind than in the body, and may be easily corrected by entire abstinence for several weeks, and by the use of a little medicine, such for instance, as a few drops daily of equal parts of Tincture of Nux Vomica, Chloride of Iron, and Cantharides, with the assurance of speedy recovery. In this way, confidence is restored, and the difficulty, of course, soon vanishes. Occasionally the obstacle is caused by too great an eagerness on the part of the individual, or by too frequent indulgence soon after marriage. At other times, again, the erections are imperfect, and the act is prevented by a premature emission. These effects frequently subside of their own accord; when they do not, an attempt should be made to correct them by a judicious course of treatment, especially the use of tonics, the shower bath, galvanism, and attention to the bowels and secretions, aided, if the parts be morbidly sensitive, by cauterization of the urethra, and mildly astringent injections." (Gross.)]

LECTURE XXXVIII.

THE VENEREAL DISEASE.

HISTORY OF THE VENEREAL DISEASE.

THE origin of the venereal disease is involved in much obscurity, and while some trace it back to the earliest ages, others give its origin in the fifteenth century. These conflicting opinions may be harmonized by dividing the disease into its two species, *gonorrhœa* and *syphilis*—two distinct affections. Both diseases have their origin in licentiousness and prostitution, and are propagated by a specific virus. We must admit, however, that circumstances may arise in which they may be generated *de nova*; but these are certainly very rare.

Gonorrhœa has undoubtedly prevailed from the earliest ages. It is probably the disease described by King David when he says: "My sore ran in the night; there is no rest in my bones, because of my sin. My wounds stink, and are corrupt, because of my foolishness, for my loins are filled with a loathsome disease, and there is no soundness for my flesh." Moses undoubtedly refers to this disease when he lays down rules for the government of those who are affected with "a running issue out of the flesh." Still, as we now distinguish two forms of urethritis, the contagious and non-contagious, the disease of olden time may have been the last.

Some authorities claim an ancient origin for syphilis, while others recognize it as a disease of modern origin. Hippocrates alludes to ulcers on the penis, to pustules, and loss of hair, while Celsus seemed acquainted with almost every kind of ulceration of the organ. William of Salicet, an early writer, referred to diseases having their origin from connection with unclean women affected with discharges. He thus describes the affection: "And the bubo occurs when a man has a disease of the penis from connection with an unclean woman, or from any other cause, which gives rise to an accumulation of corruption in this organ, which corruption being unable to find an exit, returns to the groins, according to that law of affinity which these parts have with the infected organ." It is doubtful whether the disease was the virulent one of modern times, though possessing some of its characteristics.

During the fifteenth century the disease appeared in Europe in an aggravated form, some authorities dating it at the siege of Naples in 1495. There is no doubt that the people were very much demoralized at this time, and that prostitution prevailed to a great extent. When, therefore, these large armies were disbanded, they spread the infection over the greater part of Europe, where for some years it prevailed to an alarming extent. Notwithstanding the general laxity of morals and dissoluteness of this period sufficiently account for the origin and spread of the disease, there were many who tried to trace it to a different source. The discovery of America and a new race of people furnished a pretext, and it was said to have been brought from this country by the Spanish sailors, who contracted it from promiscuous intercourse with the Indians. So persistently was this urged, that for many years it was accepted as truth. Its fallacy was proven by the fact that the virus would not retain its contagious properties for a voyage of months—that the Spanish towns at which the ships landed, instead of being centers of the disease, were more free from it than other places; and lastly, that such a disease was never known to the Indians until introduced by dissolute whites.

Whatever may have been the origin of syphilis, it has worked an immense amount of harm, and we have now to view it as a disease distributed over the entire civilized world, and one to be restricted only by carefully framed laws. Talking and preaching against the "social evil" is productive of but little good, as the sexual desire in man is an animal instinct and will not be controlled. Laws forbidding prostitution have always been productive of evil rather than good, as they could not stop it, but by rendering it more secret they rendered its diseases more intense. If, then, we have an evil we can not arrest, it is certainly good policy to so regulate it that it will do the least harm.

There is but one way to arrest the progress of syphilis, and that is to regulate prostitution by law—provide for frequent examinations and a speedy and thorough treatment, with seclusion for those who become diseased. In France this is done, as it also is in some parts of Germany, the regulations being very strict. We have lately had a very marked instance of the benefit attending such regulations in our own country. In Nashville large bodies of men were gathered together, and the disease became so prevalent that some means of checking its progress became absolutely necessary. A code of laws very similar to those of Paris were put in operation; prostitutes were examined weekly, and on the slightest symptom of disease were prohibited from following their vocation, or sent North. The result was a most remarkable diminution of the disease.

We may properly divide venereal diseases into the *non-specific* and *specific*. Of the first we have urethritis, balanitis, and posthitis; of the second, gonorrhœa and syphilis.

URETHRITIS.

Inflammation of the urethra in the male, may result from various causes, but in a majority of cases it follows connection with a woman suffering from vaginitis, leucorrhœa, or during the menstrual period. There are times when the secretions from the vagina become very acrid, and give rise to urethritis, balanitis, or posthitis. It is rarely the case, however, that these affections can be transmitted from the male to the female. Women suffering from secondary syphilis, and having inflammation of these organs, or leucorrhœa, will sometimes communicate local diseases of a very severe character, not, however, specific.

SYMPTOMS.—The symptoms of urethritis resemble to some extent those of gonorrhœa, though not usually so severe nor persistent. At first a feeling of fullness, tension, or constriction along the urethra, with frequent desire to urinate, is followed in a couple of days by burning in passing water, sense of soreness afterward, and a milky-white discharge. In the majority of cases, the ardor urinæ commences to decline by the fourth or fifth day, there is no chordee, and the discharge ceases, or becomes yellowish and creamy.

There is no possible means of determining between a specific and non-specific urethritis, other than that the symptoms of the last are much milder, as would appear by the description. It usually runs its course in a week or ten days, though it may be protracted for months, or give a great amount of trouble by continually recurring upon slight exciting causes.

TREATMENT.—The treatment in a majority of cases is simple but very certain. Instruct the patient to wash the part freely with castile soap and water, give a mild but thorough cathartic, and an infusion of equal parts of Uva Ursi and Marsh mallows. Instead of this we may give the Tincture of Indian Hemp in doses of from five to ten drops every three hours, or the Tincture of Staphysagria in doses of from one to five drops largely diluted with water, at the same intervals. Or instead of this, especially if the patient is of a rheumatic habit, ℞. Essl. Tinct. Macrotys, Essl. Tinct. Agrimonia, Tincture Gelseminum aa, fʒss, Spiritus Ætheris Nitrosi, fʒj, Simple Syrup fʒjss, M., in doses of a teaspoonful every two or three hours. Copaiba, Cubebs and other remedies of this class are objectionable.

Where the disease is severe it will be good practice to use injections, the non-irritating being best, as: ℞. Morphia Sul. Plumbi Acetas, aa gr. x, Aqua ʒiv, M., or, ℞. Potassa Chloras. gr. xx, Glycerinum, f℥j, Aqua f℥iij, M., or, ℞. Sulphite of Soda ʒss, water ʒiv, M., etc. The first named is the one I prefer, though if there is erosion and soreness of the meatus, or apthous exudation, the second will be best. The patient should be instructed to keep the organs in a quiescent condition during the treatment, and be careful in his diet.

BALANITIS—POSTHITIS.

The semi-mucous membrane covering the glans penis, and forming the under surface of the prepuce is not unfrequently the seat of inflammation. If confined to the glans, the disease is termed *balanitis*, if to the reflexion of the prepuce, *posthitis*, and if involving both, balano-posthitis.

A long prepuce with tendency to phymosis predisposes to these affections, but want of cleanliness is the most common cause. When the prepuce is thus long, the mucous membrane not being exposed is very delicate and not capable of resisting disease, as is the case when the epithelium becomes thickened by exposure. In a majority of cases, perhaps, these affections are caused by retention of the secretions of the parts, which become acrid and produce excoriation. In other cases they are the result of sexual intercourse, the female organs being the seat of inflammation, or unduly irritated, or from coitus at the menstrual period. The disease may be contracted from a female suffering with secondary syphilis, and in this case it is many times severe, and according to some may produce constitutional infection. Lastly, it may arise from exposure to gonorrhœa, and the secretion being capable of propagating the disease.

SYMPTOMS.—At first the patient feels an unpleasant sensation of itching, and in a short time soreness, and smarting when the prepuce is drawn back. If the penis is now examined, we will find the mucous membrane reddened, more or less sensitive, denuded of epithelium, and secreting a muco-purulent fluid. The excoriated patches are of a deeper red than the adjacent surface, sometimes brownish-red, or almost black. If very extensive, there may be effusion of serum in the cellular tissue, and the prepuce is sometimes so swollen that complete phimosis is the result. When the disease is situate behind the *corona glandis*, the ulcers are frequently so well defined that it is difficult to distinguish it from soft chancre.

TREATMENT.—When the prepuce can be retracted, the disease is readily treated. In fact in very many cases all that is requisite is, a free use of castile or glycerine soap and water, the part being rubbed with the cake of soap. As this treatment is too simple for most persons, I order, ℞. Castile soap, Glycerin, Rose water, aa ʒj: rub well together and apply to the penis three times a day, washing afterward with rain water. In more stubborn cases, we direct that the mucous surfaces be kept separate by pieces of lint or soft muslin spread with simple cerate, glycerine ointment, or what answers an excellent purpose, ℞. Adeps, Glycerin, aa ℥ss, Plumbi Acetas gr. x, Morphia gr. v, M. The Glycerole of Tar is also an excellent agent, especially where there is much pruritus.

In other cases, we might order one of the following washes: ℞. Plumbi Acetas grs. x, Morphia Sulphas grs. v, Aqua f℥iv; or, ℞. Potassæ Chloras ʒss, Glycerin f℥j, Aqua Rosæ f℥iiij; or, Infus. Hydrastis f℥iv, Borax ʒij. Not only may these be used as a wash, but the lint may be kept wet with them. If the prepuce can not be retracted, they should be used with a syringe, being careful to reach the entire diseased surface.

In some obstinate cases of long standing, the patches may be touched with stick Nitrate of Silver, or the Tincture of Muriate of Iron, or solution of Persulphate of Iron; and, as a wash, we may use a solution of Permaganate of Potash grs. j to iv to Water ʒj. When there is much œdema, and the treatment thus rendered difficult, it is recommended to evacuate the fluid by several punctures in the prepuce. When there is a tendency to repeated attacks, it is best to keep the prepuce retracted, thus allowing the mucous membrane to become hardened, and sometimes to assist this with astringent washes.

GONORRHŒA.

Gonorrhœa is a specific inflammation of mucous membranes, caused by gonorrhœal virus. This virus is entirely distinct from that of syphilis—the one never producing the other—as is proven by observations of the most eminent men in the profession. I deem it proper to state this fact thus explicitly, as some writers do not seem to have any positive opinion upon the subject, and so describe the matter as to leave the reader in doubt.

As regards the gonorrhœal virus itself we know but little, further than it is a muco-pus, produced during the gonorrhœal inflammation. In its physical properties, it does not differ materially from the products of simple inflammation, further than it is usually in large quantity.

The mucous membranes most frequently affected are of the urethra in the male, and of the vulva, vagina, and urethra in the female. Any mucous membrane, however, is susceptible of the gonorrhœal inflammation, and we occasionally find cases in which it has attacked the bladder, the eyes, the nose, the rectum, and the uterus, and wherever located it preserves all the characteristics of the disease of the urethra.

As the disease is dependent upon a specific virus, contact with this, is essential to its production. This usually occurs during sexual congress with a person diseased; and we may take it for granted, in a large majority of cases, that the disease is thus contracted. Of course there are exceptions: in one out of a thousand cases a man may contract a gonorrhœa from sitting on a privy-seat used by a person having the disease, sleeping in a bed occupied by such person, or occasionally by using clothing, cloths, towels, etc., contaminated by the virus. The eyes are diseased by carrying the virus to them with the hands or cloths. The nose in the same manner, the rectum by want of cleanliness, and the bladder by a gradual extension of the inflammation from the urethra.

Symptoms.—A period of *incubation*, of longer or shorter duration, ensues after exposure. The closest observers claim that this is from thirty-four hours to three days; but we find many patients who contend that a week, ten days, or even two or three weeks have elapsed before they experienced any symptoms. While I am of the opinion that the disease manifests itself before the fourth day, in a majority of cases, I must still belive there are cases in which the virus remains dormant for a considerable time.

In the male, the first symptoms of gonorrhœa are—a feeling of pricking and itching in the urethra and at the meatus, which soon becomes so intense as to be very unpleasant; the patient, also, feels a sensation of fulness, and as if there was something foreign there, and a desire to urinate and evacuate it. By the end of the second day these symptoms have become real pain, the urethra is dry, with frequent desire to urinate, and a scalding sensation when the urine passes the urethra. The discharge now commences having a milky-white appearance.

By the fourth or fifth day the disease is fully developed. The desire to urinate is very frequent, with sharp, pricking pains previous to the passage of water, and scalding while it is passing. The pain is usually more severe after the bladder is emptied, and toward the last the urine passes in drops with much tenesmus. There is a constant sensation of fulness, tension, and soreness, which is very unpleasant. The discharge has now become free, and is a yellowish, somewhat creamy muco-pus, its fluidity varying in different cases; sometimes it possesses a peculiar unpleasant odor.

If the penis is now examined the meatus will be found red, slightly everted or pouting, and on separating it the mucous membrane will be observed red and swollen. The part of the urethra diseased is swolen and hard, and pressure produces pain. In a majority of cases the disease is located, at first, about an inch and a half from the meatus, where there are numerous large lacunæ, but as time passes it gradually extends to other portions.

PAINFUL ERECTIONS, OR CHORDEE, makes its appearance now in many cases. These erections occur when the patient gets warm in bed—sometimes several times a night—and prove a source of very great annoyance. In consequence of the inflammation complete distension of the corpus spongiosum is impossible, or the urethra fails to attain the length necessary in erection, hence the downward curvature of the penis, the pain being consequent upon traction upon the inflamed structure.

When the case is left to itself the discharge usually increases for a week or ten days, remains stationary for the same length of time, and then decreases until nothing remains but a slight gleet. During the first period the suffering is greatest, but the pain and scalding, in passing water, gradually diminish during the second, and at last becomes so mitigated as to give but little trouble.

In some cases the prepuce becomes much swollen from serous exudation, and phymosis is the result. These are usually troublesome cases, and sometimes complicated with balanitis, or posthitis.

Diagnosis.—Though from the symptoms enumerated we might suppose there would be little difficulty in diagnosis, and in a majority of cases a simple inspection of the penis tells the story, there are cases which require a very careful examination, and even then we are sometimes left in the dark. I have already described simple urethritis, having no relation to the gonorrhœal virus, as a disease so similar that the best observers might be mistaken. Numerous cases are on record in which the husband was informed by the surgeon that he had gonorrhœa, and he well knowing that he could have contracted it from but one source accused his wife of unchastity. But an examination of the wife revealed no disease. These facts should cause us to be very careful in giving an opinion, when there is any doubt.

Chancre of the urethra sometimes simulates a gonorrhœa in all its symptoms, though there is not usually near so great a discharge. I have, myself, been deceived in this case, though I use much care in examination. One case came to my notice in which the patient was said to have an intractable gonorrhœa, having lasted for months; careful examination detected an indurated chancre about half an inch within the meatus.

Treatment.—The treatment of gonorrhœa is almost entirely empirical, and hence we have an abundance of means recommended, and such marked difference in its management by different practitioners. It might properly be divided into two parts, the *abortive* and *symptomatic*, in the first remedies being used for the immediate arrest of the disease, and in the second the symptoms met as they arise.

In the first stage of gonorrhœa, the disease being still confined to the fossa navicularis, the inflammation not being too acute, the abortive plan may be employed with success. This consists in substituting a common inflammation for the specific one, by the use of caustic injections. I might premise the description of the means employed by saying that in order to prove successful, the injection should come in contact with the entire surface affected, for if but the smallest portion escapes, the gonorrhœa again extends.

The injections employed should be used by the physician in most cases, the syringe working accurately, a rubber one being the best. Have the patient place his finger upon the urethra above the disease, then insert the pipe of the syringe well up, pressing the glans with the fingers to prevent the escape of the fluid, and completely fill the urethra. The injection should be used soon after urinating, and retained for from two to five minutes. After using it, the penis may be held in a vessel of water as hot as can be borne, which relieves the pain to a very considerable extent.

Nitrate of Silver has been most extensively employed as an abortive, and when used with the precautions above named, rarely produces any unpleasant consequences. The strength of the solution used varies in different cases, from fifteen to forty grains of the chrystalized nitrate to the ounce of water, being the usual quantity. I have employed it of a strength of from twenty to thirty grains. It is sometimes necessary to repeat the injection the ensuing day, but usually one is sufficient. Sulphate of Zinc is an excellent remedy, and I have used it in the following proportion: ℞. Sulphate of Zinc grs. x to grs. xv, Sulphate of Morphia gr. iij, Water ℥j, M. It does not produce as much pain as the nitrate of silver, or cause such intense inflammation. Chloride of Zinc has been employed by some in the proportion of three to five grains to the ounce of water, with morphine. Tinct. of Iodine, Tincture of Muriate of Iron, Solution of Persulphate of Iron, have been used for the same purpose, but with what success I am unable to say. In using the injection of Sulphate of Zinc, it is frequently employed of twice the strength named, and then diluted each day until the disease is arrested.

In a few hours after using the injection, the discharge becomes free; by the end of the first day it commences to diminish, and soon ceases. I usually give a brisk cathartic at the time, and direct the use of some simple diuretic infusion, as Althæa, with small doses of Tincture of Gelseminum.

Sometimes an intense inflammation follows the use of these injections, and after the use of Nitrate of Silver more or less blood is passed. This should be combated by frequent use of the hot water, the bowels kept open, mucilaginous diuretics, and the special sedatives and Gelseminum. If not successful, the gonorrhœal discharge reappears in three or four days. The objections urged to the treatment is the occasional production of stricture, and rarely a chronic contracted condition of the corpus spongiosum. These objections have been considered so grave by some surgeons that they discountenance the abortive treatment.

We may next consider the older plans of treatment, and first that of our author:

“First, then, when called on to treat a case of gonorrhœa, you should institute means to *rid the system of the virus.* I usually prescribe an

“*Emeto-cathartic* composed of the Comp. Senna Powder or Syrup, Cream of Tartar and Podophyllum, *aa* (or a proportionate quantity of podophyllin), to be taken in divided doses—say half a drachm every two hours—until eight or ten discharges have been produced. It may or may not occasion vomiting. The purging should be kept up pretty briskly during the first day's treatment; after which the cathartic may be discontinued and recourse had to

“*Mucilaginous diuretics*, such as a strong infusion of Burdock and Mullein (roots and tops of the first year's growth). For the sake of the taste and smell, you may advantageously add to this a little Spearmint (Mentha viridis) or the Monarda punctata (Mountain mint). The Althæa officinalis or A. rosea has been used with good effect. I have sometimes preferred a strong infusion of the Equisetum hyemale (Scouring Rush). Some of these articles are to be continued

“For the *second twenty-four hours;* during which time the patient should also take the Diuretic Drops (For. No. 23), to which ought to be added one-fourth the quantity of the Tincture of Cubebs (ʒi of the mixture every two hours).

Although LOCAL APPLICATIONS should never be solely relied on, nor so used as to arrest the discharge independently of *evacu-*

ants—they may be frequently useful as palliatives in connection with the foregoing treatment. For this purpose I have used the saturated (or *cold*) solution of Borax, with the addition of Saleratus in the proportion of two drachms to the pint.

" *Inject* this refrigerant into the urethra as often as once in six hours. To do this effectually, you should make use of a common silver catheter, inserting it nearly up to the bladder—as far as the membranous portion of the urethra—and withdrawing it gradually, while using your syringe, so as to fill the urinary canal above the seat of the disease. A gum-elastic catheter may answer the purpose. Should you have reason to believe that the prostatic portion of the urethra is affected, the catheter may be carried into the bladder, and that viscus filled with the injection : It produces but little smarting.

" *Two or three days of such treatment* will be sufficient to check the violence of nearly every case. If any should not yield in that time, the *catharsis* should be repeated for a day or two more. If, after this, any troublesome symptoms continue or recur, the patient should be thoroughly *sweated*, which will remove any remains of the disease. A resort to this measure is, however, rarely necessary. The *surface* ought not, in any case, to be neglected. Let the Alkaline Bath [see Introduction] be used night and morning. It is always best to use small portions of the Hepatic powders, or simply a mixture of Podophyllum and Apocynum, enough to keep the bowels a little loose for eight or ten days after the symptoms cease. Also, the Diuretic Drops should be continued three times a day.

" A SIMPLER COURSE of general treatment—which I was assured by an Eclectic Practitioner in one of our Eastern cities, has succeeded, in his hands, without a single failure in hundreds of cases, and which I have since tested in a few instances, is the following: The patient, after being directed to bathe thoroughly in alkali, and drink copiously of some demulcent diuretics, is given a *five-grain pill*, composed of equal parts of Podophyllum, Iris versicolor and Cubebs, moistened with the Balsam of fir or Copaiba. This pill is repeated every three or four hours, or often enough to produce from five to eight operations daily. This, he informs me, has effectually checked the violent symptoms in the course of a few hours after the first operation from the bowels, and often in forty-eight hours entirely eradicated the disease. In connection with these pills the same injections are used as before directed.

"In all cases, however, the patient should be cautioned, after the discharge has disappeared, not to discontinue the *bathing* for three or four weeks; and during at least as long a period the *pills* should be occasionally used, or alterative doses of Podophyllin or Iridin, or the Hepatic powder (Form No. 12)—or Pills of Ex. of Phytolacca and Juglans.

"So far as the treatment I have recommended has been pursued—and I have made pretty extensive inquiries—no instances of *relapse* have occurred, and the chronic form of the disease or *gleet* has been entirely prevented. A plan which is said to have always cured, in the course of three or four days, without any urethral injection, is the following: Let the patient take before each meal, and at bed time, fifteen grains of Balsam Copaiba, drinking in the intervals as much as the stomach can bear of a decoction of Aletris farinosa (star grass or unicorn), and taking a *dram* often enough to keep the bowels freely loose—of *bitters* prepared by dissolving two ounces of Aloes in a quart of common Whisky.*

"Before closing I will tell you of another remedy that I have

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* A skillful physician of my acquaintance, who had peculiar advantages of experience in this disease, during a twelve months' service with our army in Mexico, informs me that the following course of treatment was relied on with the most satisfactory success. In the first place, an active cathartic was always prescribed, either of Podophyllum and "Beach's Bilious Physic" (Form No. 3) or of Gamboge, Scammony and the comp. extr. of Colocynth—sufficient to operate thoroughly and several times. This was followed on the next day, and perhaps the next two days, with gentle saline purgatives—the sulphate, tartrate or citrate of potash. A single dose of one of these, sufficient to act freely on the bowels, was even sometimes found, after the other more drastic purge, to completely remove all symptoms. When this did not happen, the bowels were still kept loose, and the following cooling and slightly astringent injection for the urethra ordered: Zinc. sulp. gr. vi, Sodæ bor. gr. x, Ulm. fulv. pulv. gr. x—Aquæ oz. ij. To this gr. x of Belladonna were sometimes added, when the urethra was particularly irritable. This urethral lotion was found very useful where chordee was present and also in cases of recent stricture. After the operation of the active cathartic, the patient was ordered a bolus or pills, composed of equal parts of Balsam of Copaiba and Whitewax, melted together, with Oil of Spearmint added when cold (oz. j to oz. iv of the mixture)—as much as twenty grains of the mass being taken four times a day.

The following recipe was recently *bought* by not a few "regular physicians' of this city, from an itinerant nostrum vender: "Take Gum Arabic gr. ij, extr. of Opium gr. vi, White Vitriol gr. viii, Sugar of Lead gr. viii, water oz. viii—mix.' This was to be used as an injection, as a certain cure for gonorrhœa, with the recently been informed of by a physician of great learning and experience, which has never failed him during a long course of professional life. Take while in blossom, equal parts of the *tops* of the male and female *Hemp* (Cannabis sativa)—about eighteen inches; bruise them in a mortar, and express the juice, adding an equal portion of Alcohol. *Dose*, from one to three drops every two or three hours. This is really believed to act as a "specific" by neutralizing the poison; and although I can say nothing of it from experience, I would recommend a fair trial, from the very high authority which I attribute to my informant."

Many physicians still adhere to the old remedies, Copaiba and Cubebs, with or without injections. The combinations of these remedies are various, and it will be necessary to name but a few. Copaiba may be taken in *capsules*, containing from three to ten grains, or the oil of Cubebs may be united with it; the medicine being thus disguised, it is readily taken to the amount of from five to twenty capsules a day. Copaiba is also formed into pills by adding Sulphate of Magnesia, but this is not considered as good as other modes of administration. The most common form of prescribing these agents, is in solution, as ℞. Balsam Copaiba, Tincture of Cubebs, Tincture of Lavender, Camphorated Tincture of Opium, aa f℥j, Sweet Spirits of Nitre, Simple Sirup, aa ℥ij, M, a table-spoonful every three or feur hours; or ℞. Copaiba ℥j, Liquoris Potassæ ʒij, Ext. Glycyrrhizæ ℥ss, Spirits Ætheris Nitrici ℥j, Syrup Acacæ ℥ij, Olei Gaultheriæ gtts. xv, a table-spoonful every four hours, or after each meal. Cubebs is frequently employed in powder, and may sometimes be used with much advantage in the later stages of the disease. A common prescription is ℞. Pul. Cubebæ ℥j, Ferri Carbonatis ʒij, M., and give in doses of from one to two drachms three or four times a day.

Though sometimes attended with good results, the treatment by Copabia and Cubebs is usually protracted, and the patient becomes so disgusted, that he registers daily vows never to expose himself to *clap* again. When employed with appropri-

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addition only of *a* "sarsaparilla" syrup made for scrofula, and to be used in this case *after* the local "cure" or suppression! I give this, not of course for imitation, but to *show* what is done by those who cure with secret remedies, and impose on their patients by suppressing local symptoms, without first removing the general disease.

ate injections, it proves more successful. In the practice of most physicians, these remedies are associated with the frequent use of cathartics, and sometimes diaphoretics.

An excellent internal treatment is, after freeing the bowels, to put the patient on the following combinations: ℞. Essl. Tinct. Macrotys, Essl. Tinct. Agrimonia, Tinct. Gelseminum, aa ʒss, Simple Sirup ʒijss, M., a teaspoonful every three hours; or the Macrotys and Gelseminum may be used alone, or in combination with Uva Ursi.

Cannabis Indica is a good remedy in some cases, at times speedily arresting the disease. The tincture of fluid extract may be given in doses of from five to twenty drops every four hours.

Latterly, I have relied almost exclusively on the Staphysagria, giving it in the following form: ℞. Tincture or Staphysagria ʒj to ʒij, Water ʒiv. a teaspoonful every four hours. I have lso employed the Tincture of Delphinum Consolida with excellent results.

In other cases a general treatment may be adopted, keeping the bowels regular, attention to the skin, the use of mucilaginous diuretics, with Acetate or Citrate of Potash to the amount of three or four drachms in the twenty-four hours.

I place full as much dependence upon local means as upon the general treatment, in fact the disease may be successfully treated with injections alone. While some prefer strong injections at first, others rely on those that allay irritation. My favorite injection is, ℞. Plumbi Acetas gr. x, Morphia Sulphas gr. vj, Aqua fʒiv, M. It should be used three or four times a day, observing the precaution as heretofore named, and especially a rough use of the syringe. In place of this we may employ ℞. Zinci Sulphas gr. x, Morphia, Sul. gr. ij, Aqua fʒis, M., or ℞. Quinia Sulphas, Morphia Sulphas aa gr. x, Acid Sulph. Dil gtt M., or ℞. Permanganate of Potash, gr. iv, Water ℥iv, M.

This list might be considerably increased, but the formula named I believe to be the best for the acute stage. Strict attention should be paid to cleanliness, a free use of castile soap and water being indispensable. The hot penis bath should not be forgotten, as giving much relief.

In the second stage, the disease having lasted ten days or two weeks, we will sometimes find it advantageous to use stronger injections at first. In such case if the discharge is profuse, I would order Zinci Sulphas, gr. xx, Morphia Sulphas gr. vj, Aqua f℥ij, two injections daily for two days, and then employ the injection of Acetate of Lead, or an injection of Permanganate of Potash two or three grains to the ounce of water, will be found useful. Or the injection of Quinine above named. Occasionally benefit is obtained from a solution of Hydrastis, or a solution of Tannic Acid.

A gonorrhœa is not always cured when the discharge ceases, or even when all unpleasant sensations have stopped in the urethra. If the treatment is now stopped, it will frequently reappear and give rise to much trouble. The treatment, therefore, should be continued for a week or ten days after the discharge stops.

We will next consider in detail the accidents or rather the adventitious symptoms occurring during an attack of gonorrhœa, and which have to be met by other means than those named.

Chordee.

Chordee is a very common attendant upon gonorrhœa; so much so that it is expected in almost every case, though it is very severe in only a few. As heretofore stated, owing to the disease of the urethra, erections are very painful; but in many cases the erection is only partial and soon subsides, while in others the erection is complete and very persistent. The most common treatment is the administration of Camphor with some of the narcotics, as ℞. Pul. Camphoræ gr. xxxv, Pul. Opii gr. x, M., Ft. Pil. No. x, one or two at bed time; or, ℞. Lactucarrii, Pul. Camphoræ, aa ʒss, M., Ft. Pil. No. xv, two at bed time. Or it may be given in the fluid form, as ℞. Tinct. Camphoræ ℥j, Tinct. Digitalis ʒij, Tinct. Hyoscyami ℥ss M, two teaspoonfuls at bed time in emulsion. An enema of two drachms of Tincture of Camphor to one of Tincture of Opium in an ounce of starchwater answers well, as does a suppository of opium and camphor. Lupulin sometimes will relieve the unpleasant symptoms, though it is usually given with camphor. Bromide of Potassa has also been used. In my practice, I have found no remedy so prompt and effectual in its action as the Staphysagria, and when using it I have no occasion for other remedies.

Phymosis.

As already mentioned, the prepuce occasionally becomes infiltrated with serum to such an extent as to produce phymosis. Usually I order a lotion of Acetate of Lead, the usual strength, keeping the parts well cleansed with soap and water. A strong decoction of Hydrastis, adding a small portion of Alum, does well. If it should be very perverse, it is recommended to make several incisions into the prepuce to permit the escape of the fluid.

HEMORRHAGE.

Hemorrhage from the urethra occasionally occurs as the result of chordee. Usually but little blood passes, but I have seen copious hemorrhage. Ligation of the penis temporarily arrests the flow; it may also be checked by the application of ice, or injections of ice water. If it persists and is severe, employ an injection of Persulphate of Iron, or of Alum.

ABSCESS.

Abscesses occasionally form along the urethra, and if allowed to run their course, sometimes terminate in urinary abscess and fistula. If symptoms of such inflammation presents, the part should be painted with equal parts of Tincture of Iodine and Tincture of Aconite; and if the abscess forms, it should be opened early. Occasionally the lymphatics of the groin become engorged, and inflammation ensues. In this case, the treatment will be that named hereafter for bubo.

UNPLEASANT SENSATIONS.

Unpleasant sensations of itching or pricking, or the feeling as if there was a drop of urine in the urethra, sometimes continues for a considerable time after the disease is arrested, causing uneasiness on the part of the patient. I usually order Tincture of Pulsatilla ʒj to water ℥iv, a teaspoonful four times a day. If it is persistent, the occasional passage of a bougie will prove serviceable.

ENURESIS.

Occasionally we find a case in which the gonorrhea is attended with greater or less incontinence of urine. This is a very troublesome complication, as the continued passage of water keeps up a constant irritation. In addition to other treatment, I have obtained marked advantage from the use of Belladonna.

I usually order it as follows: ℞. Essl. Tinct. Belladonna ʒj, Aqua ℥iv, a teaspoonful every three hours. The Tincture of Ergot may be used for the same purpose, in doses of half a drachm.

ISCHURIA.

Retention of Urine during gonorrhœa is most usually caused by spasmodic stricture, and is met with most frequently in those who have previously had a diseased urethra. Though not often met with, it is a most troublesome symptom, and requires prompt treatment. It is of but little use to try to pass a catheter in some of these cases, though in others it passes without great difficulty. We will, however, have to depend principally upon medicines. A very good plan of treatment is to have the patient take a hot sitz-bath, and drink freely of an infusion of Polygonum Punctatum; or Tincture of Gelseminum and Tincture of Lobelia in the usual doses may be given with good results. Or an enema of: ℞. Tincture of Gelseminum, Tincture of Opium aa ʒij may be used. These measures are very effectual, and will not fail once in a hundred times.

Suppression of Urine occasionally occurs during gonorrhœa, but is rarely complete. The usual symptoms ensue, at first nervous irritability, then uræmic coma. It is a very grave occurrence, and is caused most frequently by irritating diuretics, though in one case I was called in to see, under the care ot a homœopath, it was the result of the disease. In the treatment of these cases, I have the bowels moved with a brisk purgative, hot applications applied continuously across the loins, and give internally Tincture of Gelseminum in the usual doses, Tincture of Veratrum in small doses. In a few hours mild, unirritating diuretics may be employed.

PROSTATITIS.

Gonorrhœal prostatitis is not of very frequent occurrence, but when the disease does extend to this gland, the symptoms are frequently severe. The patient complains of a dull, grinding or throbbing pain in the perineum, with sensation of fullness, desire to urinate, but the urine passes slowly and with shooting pain in the part. When the disease is severe the pain is intense, shooting to the anus, the back, and down the thighs, and the passage of water almost occasions spasms. If the part be examined, the prostate will be found swollen and tender on pressure.

In the treatment of this complication I would direct four or five leeches to the perineum, or active counter-irritation. For the latter the following will prove an excellent plan: ℞. Chloroform, Alcohol, aa ʒj, Benzine ʒij; wet a piece of lint in hot water, pour this liquid upon it, and press it firmly to the part. The burning is intense, far greater than would be produced with a hot iron, and of course the counter-irritation is proportionately efficient. After evacuating the bowels, I employ injections of a warm infusion of Lobelia, sometimes adding Opium or Gelseminum. Internally I prefer small doses of the Tincture of Staphysagria, or of Canabis Indica, to all other means. In place of these, we would stimulate secretion from the skin, use relaxants and mild diuretics.

Cystitis.

Rarely an acute gonorrhœa extends to the bladder, but frequently chronic cystitis results. I have witnessed acute gonorrhœal cystitis, the symptoms being those usually described in the books. For symptoms and treatment the reader is referred to my practice, pages 351, 353.

Orchitis.

Gonorrhœal inflammation of the testicle, or epididymitis, is one of the most frequent complications of the disease. It does not differ materially from that heretofore described, yet the treatment will bear some relation to the disease of which it is an attendant. It has not yet been settled how the inflammation reaches the testicle. Some contend, that passing to the prostatic portion of the urethra, it makes its way along the mucous lining of the vas deferens. I am satisfied that this may occasionally be the case, as I have in two or three instances observed perineal pain, with tenderness and pain in the course of the spermatic cord, previous to the swelling of the testicle. But I have been just as well satisfied, in other cases, that there was no such extension of the disease, the gonorrhœa being confined to the anterior portion of the penis. In this case the orchitis was the result of abnormal innervation.

The symptoms of commencing orchitis are usually well marked. The patient feels a dragging pain in the scrotum and spermatic cord, with a sensation of tension and aching in the testicle. It sometimes enlarges rapidly, attaining the size of a goose-egg in a couple of days, but in other cases the swelling is more gradual. Frequently the pain is intense, resembling that caused by a blow on the testicle, but at other times it is only when unsupported that it is thus painful, there being a constant dull aching and soreness at other times. The disease runs a very variable course, sometimes continuing for four or five weeks, if allowed to have its way, and occasionally terminating in suppuration and destruction of the testicle.

In some cases the inflammation and swelling declines, but does not entirely cease. There are dragging, unpleasant sensations, occasional soreness and pain, and the diseased testicle is larger than its fellow. In others, in addition to these unpleasant symptoms, the testicle seems to get injured frequently, the slightest blow or pressure producing pain. With this there may be a low grade of inflammation and gradual change in the structure of the organs. This might be called "irritable testis." In other cases the testicle remains permanently enlarged, and from its bulk annoys the patient.

Some writers seem to have thought that swelled testicle was a metastasis of the disease, and always associated with a more or less complete arrest of the gonorrhœal discharge. With these views they have urged the importance of re-establishing the discharge as a means of cure. I do not think that the premises are correct, at least my experience does not bear it out.

Treatment.—The most successful treatment in many cases is the judicious use of compression. For this purpose I employ the adhesive plaster, strapping the testicle firmly to the abdomen, as named under the head of orchitis previously. Dr. Howe straps the testicle and scrotum by itself, carrying the adhesive plaster around it like a roller. In either plan the straps must be applied equably, so as to produce equal compression, and renewed as often as they become loose. I have often seen a patient, after the application of the straps, get up and go about his business, when before he could hardly move without excruciating pain. If the case progresses favorably, we will observe the testicle getting smaller day by day until cured.

Though strapping answers, in a majority of cases, there are some that will not bear it. Here, in addition to the usual internal means, we use narcotics and sedatives locally. Equal parts of Tinctures of Belladonna, Stramonium, and Aconite, is an excellent local application; though other combinations may prove as efficient. Steaming the inflamed organ with a decoction of Tansy or Hops gives great relief, as does the application of hot fomentations. A poultice of pounded Peach leaves wet with water, is highly recommended. Occasionally the application of ice-water will give relief when warm applications increase the difficulty.

Internally, I prefer the use of the special sedatives, in small doses, associated with the use of the bath, and an occasional mild cathartic. If Copaiba and Cubebs have been used, they should be suspended, and the milder injections employed. In addition I would give a combination of—℞. Ext. Conii, Potassii, Iodidi, āā ʒj, Tinct. Macrotys ℥ss, Syrupus Simplex ℥iijss, a teaspoonful every three hours.

The treatment of irritative testis is a matter of considerable difficulty, as we have no remedies that act directly. Sometimes we will be successful by keeping the testicle well supported in an elastic suspensary bandage, and using a local application of one part of Pond's Extract of Hamamelis to three of water. The use of equal parts of Tincture of Iodine and Tincture of Muriate of Iron, applied locally over the spermatic cord and round the scrotum is sometimes advantageous. Internally I prefer the Compound Tincture of Corydalis with Bromide of Potassa.

GONORRHŒAL OPHTHAMIA.

Gonorrhœal ophthalmia is never a metastasis of the disease, as some of the older physicians supposed, but is caused by bringing the virus in contact with the conjunctiva. It is strange, not that it should occur, but that its occurrence is so seldom, witnessing as we do the want of care and disregard of cleanliness upon the part of persons affected with the disease. Statistics show that it only occurs once in about six hundred and twenty-eight cases; still it is a very formidable affection when met with.

Within twenty-four hours after the introduction of the virus, the patient will complain of a sensation of itching and burning in the eye, and feel a constant disposition to rub or wipe it. Succeeding this is a feeling as if sand was in the eye, with irritation when the lids are moved, accompanied by a flow of tears, and some intolerance of light. As the disease progresses rapidly, there will be a free secretion of muco-pus by the end of the second day, and by the third the disease is fully established. Now the patient can not bear the least light, the lids are swollen, there is a hot burning sensation within the orbit, and circumorbital pains. The discharge of muco-pus is now abundant, and the eyelids glued together.

If we examine the eye—which we do by using warm water with a soft sponge to loosen the adhesions—we will find the conjunctiva uniformly red and swollen. When the affection is severe the conjunctiva surrounding the cornea is so swollen as almost to occlude it, and in some cases the eye is not visible at all—nothing but a fiery-red mass being seen when the lids are opened; this swelling surrounding the cornea is termed chemosis.

Progressing still further, ulceration of the conjunctiva occurs, and in other cases, *phlyctenula* of the cornea, which terminates in ulceration and sometimes perforation. In some cases the chemosis is so great as to strangulate the cornea, and it sloughs, discharging the contents of the eye. In others the cornea becomes weakened from imperfect nutrition, and possibly from ulceration, and the fluids of the eye pressing upon it causes it to project, forming staphyloma.

TREATMENT.—In the early stage of the disease it is usually managed readily. Give the patient a brisk cathartic of Compound Powder of Jalap and Bitartrate of Potash, bathe the feet thoroughly in mustard and water, and to produce diaphoresis give one powder every two hours of Diaphoretic Powder gr. v, Quinia gr. j. Let the eye be thoroughly washed every three hours with water as warm as can be borne, and drop in the eye afterward the following collyrium: ℞. Essl. Tinct. Belladonna ʒj, Tinct. Gelseminum ʒij, Water ℥ij; or, ℞. Aromatic Sulphuric Acid gr. x, Morphia Sulphas gr. iij, Water ℥ij. Mix.

Six or eight leeches may be applied near the eye with advantage, or two or three small cups may be used. Following this I direct the application of ℞. Oil of Amber ℥j, Tincture of Belladonna ℥ss, around the orbit. Some have thought that a fly-blister to the neck, over the mastoid process, or in front of the ear, was an assistance, but I do not think it of much advantage in this case.

When the disease is further advanced more care will have to be employed in keeping the eye free from the secretion, and stronger collyria used. It is true that the mild ones named will answer, but much care is required. If the chemosis is marked, it is well enough to snip the swollen conjunctiva with a pair of scissors. A decoction of Hydrastis, filtered, is an excellent wash for the eye, as in a decoction of Baptisia; these may be used frequently, in the place of water, to keep the eye cleansed of the secretion. Some surgeons employ a strong solution of nitrate of silver, thirty or forty grains to the ounce of water applied carefully to the inflamed conjunctiva with a camel's hair brush. Sulphate of Zinc, ten grains to the ounce of water, is used in the same way.

It must not be supposed that local treatment alone is necessary. In the second stage of the disease the bitter tonics, iron, and a good nutritious diet are absolutely indispensable. Ulceration with perforation, staphyloma, and other accidents, result, not only from destructive inflammation, but from imperfect nutrition, hence much attention should be paid to the organs of digestion and the diet.

Gonorrhœal Inflammation of the Nose.

I have seen a very severe form of inflammation of the mucous membrane of the nose, produced by the gonorrhœal virus. It may be confined to one side, or involve the entire nose, causing great suffering. At first the symptoms resemble, to some extent, a bad cold. The nose is dry, stops up, there is a feeling of itching and irritation, and some pain. Soon a discharge of muco-pus occurs, which in a day or two becomes profuse. There is pain and uneasiness, stopping of the nose, a feeling of fullness, and dull, aching pain in the forehead, and shooting pains in the face. The disease may go on in this way for two or three weeks, and finally decline into a chronic ozæna.

Treatment.—In this case we would adopt the constitutional treatment recommended in gonorrhœal opthalmia. As a local application we will find the following to be efficient: ℞. Chlorate of Potash, ʒij; Common Salt, ʒij; Glycerin, ℥ij; Water, Oj; M. ℞. Permanganate of Potash, ʒss; Water, Oj; M. ℞. Decoction of Baptisia, Oj; Common Salt, ℥ss; M. ℞. Alnus Serrulata, Rumex Crispus, Quercus Rubra, aa ℥ss; Boiling water, Ojss; infuse and strain. ℞. Water Oj; Common Salt, ℥ss, may be used as a common wash to cleanse the parts. These washes may be used with a syringe, or with a hydrostatic apparatus. If a syringe is used, the pipe should be inserted into one nostril, which is pressed against it to prevent the fluids escaping, and the patient directed to breathe through the mouth, and the injection slowly thrown in.

A very ingenious apparatus used for chronic ozæna may be employed here. It consists of a holder like a pint bottle, with the bottom broken off; to the neck of this is attached an india rubber pipe, a yard or two in length, terminating in a nozzle for the nose. The jar containing the fluid for injection, being placed upon a retort stand, one or two feet higher than the head, the fluid is permitted to flow into the nose by its own gravity. The patient *must* breathe through the mouth, when the fluid will flow into one side of the nose and out at the other; but if the mouth is closed for an instant it will flow down the throat.

Gonorrhœal Disease of the Rectum.

We meet with this affection most frequently in females, but it occasionally occurs in males. I have not yet satisfied myself whether it is a true gonorrhœal inflammation, or simply developed by position or sympathy. At any rate I look upon it as one of the most distressing accidents of this disease.

I have witnessed it in two forms, in one the symptoms being those common to hæmorrhoids, but more severe, and in the other a species of dysentery. In the first case the patient feels an unpleasant sense of weight and heat in the rectum, with shooting pains from it. No position gives ease, both lying, sitting and standing being alike painful after a time. Any active exercise occasions severe suffering, which wears upon the general health. The bowels are constipated, though there is a desire to go to stool, and in some cases the passage of mucus. In the second case an irritation of the rectum is set up with tenesmus, and discharges of muco-pus. The pain is tensive, and passes through the pelvis to the back and down the thighs. The bowels become affected with diarrhœal discharges, the appetite impaired, and the general health much affected. Not unfrequently the cellular tissue about the rectum becomes involved in the inflammation, and abscesses form which if not properly attended to result in fistula. In such cases the sufferings are very intense, the pain tensive and throbbing, with more or less febrile action. I have known ten to fourteen days pass before there was distinct evidence of suppuration.

Treatment.—It is essential in this disease that the bowels be kept gently open, or if there is tendency to diarrhœa, that it be checked at the commencement. A very good combination to keep the bowels soluble, is: ℞. Compound Tincture of Senna fʒjss, Essl. Tincture Leptandra fʒss, in doses of a teaspoonful four times a day. If it produces griping a small quantity of chloroform may be added. Should there be tendency to diarrhœa: ℞. Syrup of Rhubarb and Potash fʒjss, Essl. Tinct. Leptandra fʒss, Chloroform fʒss, M., a teaspoonful every one or two hours. In addition to this I order: ℞. Essl Tinct. Hamamelis fʒss, Tincture Staphysagria, fʒj, Simple Sirup f℥iijss, M., in doses of a teaspoonful four times a day. When the pain is severe, and the patient restless and uneasy, we may prescribe Diaphoretic powder gr. v, Quinine gr. j, every four hours, which is usually better than giving Morphine.

Locally I have been much pleased with the action of enemas of ℞. Chlorate of Potash gr. x, Tincture of Opium gtt. xx, Glycerin ʒss, Water ʒijss. A solution of Permanganate of Potash gr. j, to gr. v., to the ounce of water is good, as is also a solution of Sulphite of Soda gr. v, to Water ʒj. A decoction of equal parts of Baptisia and Hydrastis, answers a very good purpose, and Opium or Morphia may be added to it if necessary. One part of the Fluid Extract of Hamamelis to four of water will be our best local application, if the disease is slow, with torpid venous circulation. Sometimes injections will not be well borne, and we may then use suppositories in their place.

If symptoms of cellular inflammation come up, it is well to paint the skin around the anus with two parts of strong Tincture of Iodine and one part of Tincture of Aconite. When suppuration is manifestly progressing, relief is experienced by sitting over the vapor of a decoction of Hops, Stramonium or Tansy, or hot fomentations of these may be continuously applied. If the vapor is used, the part may be poulticed between times. As soon as evidence of accumulation of matter is had, the lancet should be passed down to it, and give exit to the pus. This relieves the pain, prevents the pus burrowing, and lessens the danger of fistula. If the pain continues after this, use an injection into the abscesses of a strong solution of Sesquicarbonate of Potash.

GONORRHŒAL RHEUMATISM.

Some writers have not been willing to admit any relation between gonorrhœa and rheumatism, claiming that the occurrence of the latter at this time was accidental, or dependent upon other causes. The majority, however, and especially late writers, recognize and describe the disease. The most rational account of the pathology of the affection I find in Chambers' "Renewal of Life:"

"Gonorrhœal Rheumatism is a convenient conventional term which we continue to employ, really for want of a better. It means a specific acute or subacute inflammation of joints and the neighboring white tissues, bearing in its external aspects a resemblance to sometimes one and sometimes another of the forms of the disease it is named after. But it has not the slightest other relation, either pathological or therapeutical, besides external similarity, to rheumatism.

"It is really due to a poison absorbed into the blood from a mucous membrane affected with purulent gonorrhœa, and thus has more claim to be classed by the side of pyæmia than in the position where it is now placed. Like pyæmia, too, it has a strong tendency to disorganization of the affected part; pus and fibrin are formed and the tissues are destroyed in bad cases. Like pyæmia, too, it does not exhaust itself by the inflammations which arise; it is not an acute disease, in the sense of tending to recovery, but a chronic disease, getting worse and worse if not arrested. It is an accident of gonorrhœa, not an essential part of it, just as pyæmia is an accident of surgical operations on wounds.

"Its extreme rarity in the female sex is an additional evidence in favor of the poison being absorbed from the locally diseased part. In woman the mucous membrane principally affected by gonorrhœa is the vaginal, a tough, strong surface which bears a good deal of ill treatment without serious injury. Its diseases have but little influence on the general health. But the male urethra is a much more delicate part, and we can easily comprehend that it should oftener take up the gonorrhœal virus and communicate it to the rest of the body.

"Being an accident, it may occur at any period of the gonorrhœa, sometimes happening only a few days after the first commencement of the running; but by the simple doctrine of chances of course more likely in the longer period before the patient is free. Hence it often appears just as the urethra or vagina is getting well, and so has been reckoned an instance of metastasis. Metastasis however it is not, for often and often the discharge continues as bad as ever, or even grows worse, while the joints are swollen. And when the joints get better, there is no return or aggravation of the original ailment."

This is not merely a pathological question; for on the notion of metastasis it has been proposed to try and bring back the gonorrhœa to the genital organs by irritating injections. I have seen this actually done, but without any of the desired effects on the arthritic affection. Even if it were a curative operation, I should be averse from practicing it, for the disease which you thus give the patient is not true gonorrhœa, but urethritis or vaginitis, and that of a chronic character—a much worse thing. I say it is a much worse thing, because it is so dangerous, so very difficult to cure, not rarely indeed proving quite incurable.

The symptoms of gonorrhœal rheumatism do not differ very materially from the sub-acute form usually met with. Some days or weeks after the discharge commences, the patient complains of pain and soreness in one or more joints, which become swollen, hot, red and painful. The tongue is coated white, the appetite impaired, and the secretions partially arrested. The constitutional disturbance is usually slight—sometimes entirely absent—but in rare cases it is very marked. The disease usually progresses slowly, and shows but little tendency to yield to the common treatment. Sometimes it becomes chronic, and the patient is permanently disabled.

So marked is the relation between the gonorrhœa and rheumatism, that we can safely assume in certain persons, that if they contract a gonorrhœa, rheumatism of the joints will follow.

Treatment.—I have but one course of treatment in this affection, and as it is uniformly successful, more need not be desired. Freeing the patient's bowels, I order—℞. Extract of Conium ʒj, Iodide of Potash ʒij, Tincture of Macrotys ℥j, Simple Syrup ℥iij; a teaspoonful every three hours. To the affected joints I direct flannel cloths wrung out of a solution of

Bi Carb. Soda ℥ss, Water Oj, and the joint kept wet with it. If the case is severe, the application of dry cups around the joint will give much relief, and assist in the cure. In addition to this, the patient may take a bitter tonic with Iron, and should have a nutritious animal diet. The treatment for the gonorrhœa will still be pursued, and no measures made use of to reproduce the discharge, if it has ceased.

Gleet.

Gleet is a chronic inflammation of the urethra, succeeding a gonorrhœa, attended with a muco-purulent discharge. Like all other chronic inflammations, it manifests little tendency to spontaneous recovery, and sometimes resists judicious treatment for a long time. In a majority of cases it follows gonorrhœa without any break in the symptoms—the pain, burning on passing water, and frequent micturition, passing off, in some weeks or months—the discharge still continuing.

Examination of the urethra proves its inflammatory character—the mucous membrane presenting a similar condition to that found in chronic inflammation of other parts. Rokitansky thus describes its condition in gonorrhœa and gleet: "We find the anatomical characters to be those belonging to catarrh generally; in the acute stage there is, according to the violence of the process, redness, injection, tumefaction of the urethral mucous membrane, enlargement of the follicles, relaxation of the sinuses, and a white or colorless secretion. The inflammation is either uniformly diffused over the urethra, or is limited to one or more spots. In genuine gonorrhœa of the male urethra, we find not only the navicular fossa, but every point as far as the prostatic portion, and especially the vicinity of the bulb of the urethra, liable to become the seat of the disease." In gleet, the inflammation is sometimes confined to the lacunæ of the navicular fossa, but in a majority and the more stubborn cases, it is situate at the bulb or at the prostatic portion.

The discharge in gleet varies greatly, even in the same person, at different times, and it may cease and recur at intervals. Most usually it is somewhat milky white, opaque and tenacious; but in other cases and at other times it is yellowish and creamy. The discharge varies in quantity—sometimes being abundant, at others just sufficient to keep the penis moist and stain the clothing. There is rarely any pain or uneasiness attending it, except an itching, pricking sensation before passing water, and sometimes whenever the mind is directed to it. It is surprising what an effect it has upon the general health, in many cases where the discharge is but a few drops daily. Persons become morbidly sensitive to the discharge, brood over it, examine the penis every opportunity, press it to see if any matter will pass, and thus keep the nervous system continuously upon the strain.

It is a matter of much importance sometimes, to determine whether a discharge from the urethra is contagious. This will frequently be pressed by the patient, who feels very anxious in regard to it, and who will have a direct answer. We have no means of determining this matter, and can not possibly tell when the contagiousness of a gonorrhœa ceases, and the gleety discharge is non-virulent, as there is no recognizable difference in the character of the muco-pus. I have seen a gonorrhœa lose its contagious character in a couple of months, and a gleet retain it for over a year.

On this subject Vidal remarks: "It is difficult to name the precise period at which a blenorrhagia ceases, and a blenorrhœa begins. Some authors maintain that the discharge is no longer blenorrhagia, but a gleet, when it ceases to be contagious; others regard it as a gleet when it is no longer troublesome, when the discharge is transparent and viscous, like mucous. But it is well known how difficult it is to establish contagion from an urethral discharge, and as regards its transparency and mucous character, this may change from day to day; indeed, a gleet which to-day may be transparent and mucous, to-morrow may be opaque and more or less purulent, and all this may come from the least imprudence in regimen." Bumstead remarks on this subject: "It may at the present moment be wholly mucous, and entirely innocent of contagious properties, and yet a short time hence be purulent, and in the highest degree dangerous. The fact is, no one can pronounce sexual congress safe, so long as a urethral discharge exists, and in replying to the frequent questions of patients on this point, the surgeon should not only avoid incurring the responsibility of allowing it, but do all in his power to dissuade from it."

As regards the *prognosis* of gleet, the surgeon should be very reserved. Some cases are readily amenable to appropriate treatment, while others are very stubborn. Not unfrequently the discharge ceases under the use of remedies, and we flatter ourselves that the patient is well, but a suspension of the medicine, or some indiscretion brings it back.

Treatment.—I have a stereotyped treatment for gleet that I always adopt at first; if it fails, then I try other means. It consists in the internal use of—℞. Tincture of Staphysagria fʒij, Water f℥iv; mix. ℞. Essl. Tinct. Hamamelis f℥ss, Water f℥iv; mix. Each of these is taken in doses of a teaspoonful four times a day, the doses being alternated so that one will come midway between the other. An injection is used of—℞. Acetate of Lead gr. xx, Quinia Sul. gr. x, Water ℥iv—used with a Tieman's universal syringe, so as to bring the fluid in contact with the inflamed part. Special attention must be paid to the general health, the bowels kept regular, the other secretions free, the appetite good, and a nutritious diet employed, avoiding stimulants.

In place of this treatment, a cure may, many times, be effected by strict attention to the general health, without special medication. The stomach should be placed in good condition, and digestion and nutrition improved by the use of bitter tonics and Iron. The compound Iodine pill, composed of—℞. Iodine, Ext. Nux Vomica, āā gr. vj; Hydrastin ʒss; Ext. Macrotys gr. xx. Mix and make thirty pills; give one every three or four hours. Or the Compound Quinine Pill, composed of—℞. Quinine, Hydrastin, āā ʒj; Ext. Nux Vomica, Podophyllin, āā grs. vj. Make thirty pills, which may be given the same way. Tincture of Muriate of Iron seems to answer as well if not better than other preparations of Iron. Keeping the bowels regular, with slight action upon the liver, is an important part of the treatment. In addition to this, the patient should have a salt-water bath every day, with brisk friction the entire length of the spine.

Copaiba, Cubebs, Tincture of Cantharides, and remedies of like class, have been employed to considerable extent, but without any especial benefit that I have ever seen. In fact they many times do harm, by irritating the stomach and digestive canal, and keeping up too great excitement of the kidneys. Tincture of Cantharides may be employed for a short period, in small doses, in combination with the Tincture of Iron, with good effect; but its long use is not to be recommended.

Many agents are used for injections in this case. Sulphate of Zinc answers well, one to five grains to the ounce of water; Tannic Acid, gr. v to x to Water ℥j; Alum ʒj to Water ℥viij;

Solution of Per Sulphate of Iron ℈ss to Water fʒvj; Nitric Acid gtt. xx to xxx to Water ʒviij; Permanganate of Potash gr. vj to Water ℥iv; Tincture of Iodine gtt. x to Water ʒvj. This list might be extended; but the remedies are of the same character. In using injections for the cure of gleet, Tieman's syringe with perforated tubes is indispensable, as the solution must be brought in direct contact with the parts diseased. Acton's glass syringe with long tubes may be used, if employed with care; or a common silver catheter may be perforated with fine holes and used as an attachment to a common syringe.

If the means first named fail, I place more confidence in the use of the bougie and blister than any other. The use of the bougie should be continued for some time in order to obtain its good effects, as at first it may increase the irritation and discharge. It may be passed once or twice daily, using as large a size as will pass easily. The blister is unpleasant, but it sometimes proves very serviceable. The Cantharides Plaster, about an inch in width, should be applied so as to cover the entire diseased structure. It may be reapplied every third or fourth day, so as to keep up constant irritation. I have no doubt but that the irritating plaster, applied after the first blister, would answer better, though I have never used it.

Gonorrhœa in Women.

Gonorrhœa in the female is, for the most part, a disease of very different character from that affecting the male. This difference, however, consists in the different location of the disease, and not in the character of the morbid virus which produces it.

There can be no doubt, but that this disease arises from a specific morbid material or virus, generated by the diseased parts, though the existence of this specific virus has never been fully demonstrated. This disease recognizes for its pathology, acute or chronic inflammation of the vulvu, urethra, vagina, canal of the cervix, and even of the mucous membrane lining the cavity of the uterus and the fallopian tubes. This inflammation, though differing but slightly from the ordinary form, gives rise to the peculiar product by which it was produced, and which will continue to reproduce the same specific inflammation. On this subject Dr. Bennet remarks, "It is a singular pathological fact, that, although the existence of a specific and contagious form of vaginitis is generally admitted, yet it is difficult, if not impossible, to point out any decided characteristic, by which it may be distinguished from ordinary vaginitis. Like all those who have preceded me, I am unable to indicate satisfactorily, any absolute means of distinguishing simple inflammation, though I believe the difference does exist." Certainly there is a gonorrheal virus, although it can not be demonstrated. In the female, gonorrhœa is not confined to the urethra, being scarcely, if ever, confined to that canal, and in some cases not affecting it at all; but it is also seated in the mucous membrane, reflected over the neck and mouth of the uterus, and in the canal of the cervix, in the vulva, the vagina and its follicles, and the vulvo-vaginal glands.

We have then to consider,

1st. Urethral gonorrhœa, the type of the disease as it affects both male and female, differing, however, in the two so far as regards the anatomical structure of the two canals. The female urethra being much shorter, more dilatable, and lacking the prostate gland and other appendages of the male urethra, the affection of which so often greatly aggravates the disease; the consequence of this difference of structure is, that this form of the disease is much milder in the female than in the male. The contagious property of the virus, secreted by the urethra, is said by some authors to be much greater than that secreted by other parts.

2d. A specific inflammation of the vulva or vagina producing a discharge, which will produce the *specific gonorrheal* inflammation in the male; this may exist alone, or it may be complicated with the urethral or uterine inflammation

3d. A specific inflammation of the cervix uteri, of its canal, and of the mucous membrane lining the uterine cavity and the fallopian tubes, the product of which is contagious, reproducing the same specific inflammation in the male.

Either of these three forms of disease may be acute or chronic, or complicated with some other affection of the parts.

The urethral form of gonorrhœa is rarely met with alone; it is said that it scarcely ever occurs, unless complicated with the other forms. The symptoms that present themselves are somewhat similar to, though much milder than those in the male. The first stage, that of irritation, comes on in from three to five days after connection. The patient begins to experience a sensation of heat, itching, and general irritation along the course of the urethra, but more especially at the meatus urinarius. As the inflammation advances, the orifice of the urethra will be found swollen and gaping, and in some cases the mucous membrane will be slightly everted. The urethra along its entire course in the anterior wall of the vagina, will be found perceptibly enlarged, and more or less tender on touch. If the finger be pressed along the course of the urethra, a muco-purulent fluid will exude from the meatus; as the inflammation becomes more severe, the discharge will be more abundant, thick, and of a greenish-yellow color. There is pain in micturition, and a sensation of scalding when the urine is passed. Sometimes this irritation is so great, that the passage of the urine will be checked or entirely stopped by the spasmodic contraction of the urethra. There is also a constant desire to urinate, but when the urine is passed, it flows in a smaller stream and in smaller quantities. These symptoms usually continue from ten to fourteen days, when the third stage, or that of chronic or sub-acute inflammation, sets in; during this period the acute inflammatory symptoms subside, the thick yellowish-green discharge ceases, and is replaced by one of a thin, muco-purulent character. With the cessation of the severe inflammatory symptoms, the swelling of the urethra is reduced, and the tenderness and pain is much modified. The third stage of the disease may continue indefinitely for months and even years, the slight discharge and tenderness along the course of the urethra being all the symptoms that are left to mark the existence of the disease: even this gleety discharge is said to produce this disease in very susceptible persons.

According to Mr. Parker, when the vulva is the seat of the disease, the labia majora is more or less swollen; on everting them, their internal or mucous surface is red or inflamed, uniformly or in patches; or, again, it has an apthous, patchy appearance, especially in old cases; the surface is sometimes studded with warts, and occasionally the whole labia are converted into a condylomatous mass, which runs backward along the perineum to the margin of the anus, which is surrounded by similar growths. Sometimes a similar condition of the mons veneris exists, but this is comparatively rare. The labia minora are also red and swollen, and the entrance to the vagina contracted, red, and intensely tender in acute cases; between the folds of the labia, a white, sticky secretion is found, like that under the prepuce in balanitis in the male. The irritation, itching and pain are intolerable in gonorrhœa, where the vulva is especially affected, particularly in cases where a newly married woman, previously healthy, has been diseased by the husband, who has married with an uncured blenorrhœa, a circumstance not very uncommon."

When the vagina is affected by gonorrhœa, it will be found contracted, its mucous lining hot, red, and painful, and the rugæ red and elevated; the inflammation rarely affects the whole vaginal surface at once; that part under the pubis being most frequently the seat of the disease. In from twelve to forty-eight hours after connection, the patient will perceive the first symptoms of the disease: a sense of heat, soreness, and fulness of the vagina, and there will often be a thin, colorless and acrid discharge. In the second stage, when the inflammation is at its hight, these symptoms are all increased; the pain is severe, especially if any exercise is taken; there is a feeling of weight and dragging down in the pelvis and lower portion of the abdomen; the pain may extend to the back or down the thighs, and very frequently the irritation extends to the bladder. The discharges now become increased in quantity, and thicker, and of a whitish, greenish, or yellowish-green color. In from eight to ten days, the acute symptoms disappear, and the third stage, or that of chronic inflammation sets in. In this stage of the disease, the vaginal discharge is generally plentiful, though there is very little, if any, tenderness; the mucous membrane has lost its red appearance, and is generally paler than natural; the vaginal walls have generally a loose and flabby feel. This condition may continue indefinitely.

The mucous membrane covering the cervix may be affected with the vagina, or it may be the seat of a separate affection; the symptoms are similar to those first described. The os uteri is frequently affected, as well as the cavity of the cervix. In this case the os will be found, on examination, to be dilated, red and generally tender to the touch. The patient will complain of a weight in the pelvis, pain in the back and in the ovarian regions. The symptoms here never present the acute form that I have described above. The inflammation of the cavity of the cervix gives rise to a more or less profuse discharge of the peculiar transparent, tenacious, white of egg mucus, secreted by the follicles of this canal. This secretion may continue for months, retaining its contagious character to the last; it likewise exerts a greater effect on the general health than any other form of the disease. Those cases in which the gonorrheal inflammation extends to the cavity of the uterus, or the fallopian tubes, is fortunately very rare; some cases have been reported, however, in which this was the case, and in which the discharges were contagious. A few cases have also been reported, in which the disease produced severe attacks of peritonitis.

In general, but slight constitutional symptoms are developed, and these are so temporary that they give the patient but little uneasiness. In other cases, however, if the inflammation be very severe, the patient will suffer from rigors, heaviness and languor, pain in the back and round the loins, headache and thirst, with a quick pulse and a loaded tongue. These symptoms are mitigated, or disappear on the establishment of the discharge.

The question arises here—is gonorrhea a purely local affection? From the experience that I have had in it, I think it is not, and in this opinion I am supported by some of the best authorities. On this subject, Mr. Erichsen says: "Although the gonorrhea in the early stages is doubtless a strictly local affection, yet there is a particular train of phenomena occasionally following it, of a very characteristic nature, that can scarcely be looked upon in any other light than as being the results of constitutional infection, the more so, as they are very apt to occur in some individuals, who never have gonorrhea without the disease being followed by these consequences, while others are altogether exempt from them. The parts that are principally affected, are the fibrous tissues, the mucous and the cutaneous surfaces. The affections of the fibrous tissues give rise to rheumatism, and to peculiar forms of disease of the testicle and of the sclerotic. The affection of the mucous membrane displays itself in specific inflammations of the throat and of the eyes, and the skin becomes the seat of certain eruptions. The occurrence of these various affections, assuming as they do, a specific type so distinctly marked, that they can at once be characterized as gonorrheal, certainly tends to show that the disease impresses the constitution in some peculiar manner, something analagous to, though in a far minor degree, and with much less certainty than syphilis."

Affections of the fibrous tissues, following gonorrhea in the female are rare; the affections of the skin and mucous membrane are, so far as my experience extends, far more common in the female than in the male. These attacks generally occur, in from six weeks to three months, after the first attack. The cutaneous eruption that I have noticed, consisted of a superficial inflammation of the skin, which appeared in patches, and gave the patient much uneasiness, on account of the itching which accompanied it; these patches appear principally over the abdomen and chest; as soon as their color begins to fade, the epithelium is partially thrown off in fine scales: it presents no sign of the coppery redness accompanying syphilitic skin diseases. The throat commonly becomes similarly involved at the same time, presenting a superficial redness on the pillars of the fauces, and the velum-palati, with sometimes superficial ulceration on these, the tonsils and the uvula. The occurrence of these affections is usually preceded by slight febrile action, which, however, subsides on their full evolution. These secondary affections never occur only in those cases in which the primary local disease has not been properly treated.

Diagnosis.—Can gonorrhea be diagnosed from other inflammatory diseases of these parts? According to Dr. Churchill, the distinction between vaginitis and gonorrhea is very difficult. The discharge from the urethra (though it does occasionally occur), is much less frequent in leucorrhea than in gonorrhea. Out of every two hundred cases of the latter kind, Ricord states that eight in every twelve had the urethra so affected. The glands of the groin are also much less frequently enlarged in simple acute vaginits. In addition, the moral character of the patients will afford a certain amount of assistance in forming a decision.

The observations of Donne, if they are borne out by future investigations, will furnish the most reliable means of diagnosis. He states that in the gonorrhœal discharge there are certain animalculæ, which may be detected by the microscope, and which are never found in any other discharges from the vagina. These animalculæ may be recognized by the elongated filiform appendix attached to their bodies, and which may be seen in motion if the discharge is recent.

As the diagnosis of this affection is so difficult, the physician should be careful not to express an opinion in these cases. Even if he is satisfied in regard to the cause, it is seldom that any good will result by insisting, even with the patients themselves, in tracing it to a criminal origin; while, on the other hand, the knowledge that the discharge in simple leucorrhœa, sometimes becomes so virulent in character as to produce all the symptoms of gonorrhœa in the male, should make him extremely careful, lest he wrongfully accuse an innocent person.

Treatment.—The treatment of this disease will vary much, according to the location of the inflammation; the general treatment, however, will be nearly the same in all three of the varieties named. If called to a case of gonorrhœa in its acute stage, a brisk cathartic should be administered, if there is nothing to contra-indicate it. For this purpose I use, ℞. Compound Powd. of Jalap and Senna ʒss, Podophyllin gr. ij, M. Ft. Pulvis iij. Let one of the powders be taken every three hours, until the bowels are thoroughly evacuated. This cathartic may be followed by the use of, ℞. Veratrin gr. ij, Asclepin ʒss, Comp, Powd. of Ipecac. and Opium gr. xxxx, M. Ft. Pulvis x. Let the feet be bathed in warm water, and one of these powders be given every two hours, until free perspiration is induced, and then continue at longer intervals, to keep up a constant determination to the skin. Until the disease is subdued, the entire surface of the body thould be bathed, at least once a day, with the alkaline bath, using considerable friction. This, though it may appear a simple matter, will be found of the utmost importance in the treatment.

If the urethra be the seat of the disease, mucilaginous diuretics should be administered with the above agents. Such as a strong infusion of the Althæa Officinalis, Equisetum Hyemale, Verbascum Thapsus, etc.; to each dose of this infusion we may add, with much advantage, Citrate of Potassa gr. xx, or the liquor Potassa Citratis f℥ss. As local applications in the acute stage, we might make use of the warm hip-bath, or the frequent use of vaginal injections of warm water, or an infusion of Stramonium; if the inflammation be severe, hot fomentations to the vulva will be found of much advantage. Under this treatment the more acute symptoms will have disappeared in two or three days, when specific agents may be employed; of these I prefer, ℞. Pulv. Pip. Cubebæ ℥j, Ferri Carbonat ʒss; M. Ft.

Pulvis viij. Take one powder three times a day; or, ℞. Tinct. Piper. Cubebæ, Spiritus Ætheris Nitrici, Oleum Amygdala Dulcis aa ʒij, Oleum Juneperi, Oleum Menthæ Viridis, Oleum Terebinthinæ aa ʒss, M. Ft. Misturæ. Of this the patient may take a teaspoonful every three hours. Other prescriptions might be introduced here, that have been used with much success; these two, however, will be found to fulfill every indication, the urethral disease being entirely removed under their use, in from two to four days.

Where the disease has existed for a considerable length of time, and degenerated into a gleety discharge, the Cubebs and Iron should be administered, and a urethral injection used, of a solution of the Sulphate of Zinc (gr. vi to ʒss of Water), or the Sesquicarbonate of Potassa (gr. v to ʒj of water).

Where the gonorrhœal inflammation is located at the vulva, warm fomentations should be employed, until the irritation is subdued. The parts should likewise be well washed, at least twice a day, with warm water and Castile soap, to remove the tenacious secretions from the parts. If there be much pruritus present, the lotion of Borax and Morphia will be found to give much relief. In some cases a poultice of equal parts of Ulmus Fulva and Hydrastis Canadensis, will be found to answer a better purpose than the fomentations. In old cases, where condylomata have been developed, they may be removed in the manner hereafter spoken of.

The treatment of gonorrhœal vaginitis will be precisely similar to that recommended for acute and chronic vaginitis. In the chronic form of this disease, however, there are sometimes small vegetations springing from the vaginal walls, which will have to be removed before any treatment will be successful. This may generally be accomplished by clipping them off with a pair of scissors, and touching their base with the stick Nitrate of Silver.

The inflammation of the canal of the cervix that so frequently exists, and that is so rarely reached by the remedies used for this disease, is probably one great cause of the intractable nature of gonorrhœa in the female. On this subject Mr. Langston Parker says, "I believe that gonorrhœal diseases in the female are very rarely completely cured. This, in most cases, arises either from neglect on the part of the patient, or the want of a proper knowledge of the disease, careful examination of the parts affected, and an appropriate topical medication on the part of the surgeon. If Mr. Whitehead's notion be correct, then the canal of the cervix is the first part affected, and the vaginal or urethral mucous surfaces are only secondarily diseased, the disease is not likely to be cured without topical applications to the primary seat of the complaint. In all cases, then, of suspected gonorrhœa, the cervix should be carefully examined with the speculum, as soon as the acute inflammation has been subdued, so as to admit of its use. If the os uteri be dilated, the mucous secretion should be removed from it, by fixing a lock of cotton on a pair of long dressing forceps, so as to bring the vaginal injections in contact with the diseased surface. If the disease does not yield under this treatment, a solution of Sulphate of Zinc (gr. x to xx to ℥j of Water) or the Sesqui-Carbonate of Potassa (gr. xv to xx to ℥j of Water), or the Nitrate of Silver (gr. xx to ʒj to ℥j of Water), should be applied to the cavity of the cervix, with a camel's hair pencil, and repeated as often as may be necessary. In all respects, gonorrhœal inflammation should be treated in the same manner as simple inflammation of the cervix.

I have employed the Staphysagria and injection of Acetate of Lead in the gonorrhœa of females, and sometimes with good success, but it is not so certain as in the male. Injections of Chlorate of Potash act well. I frequently prescribe ℞. Chlorate of Potash ℥j, Sulphate of Zinc Oj, M., divide in six powders, add one to a pint of water, and use freely as an injection. Permanganate of Potash answers a good purpose when the discharge is free, in the proportion of ʒj to Water Oj. Internally I have sometimes relied exclusively upon an infusion of equal parts of Uva Ursi and Althæa in the first stage, and Tincture of Muriate of Iron in the second.

If the disease is protracted, and the mucous membrane thickened and relaxed, strong injections will be found best. Tincture of Iodine one part to Water three or four parts, brought in contact with the entire surface will sometimes effect a speedy cure. Sulphate of Zinc gr. xx to the ounce of water answer a good purpose, as will the Nitrate of Silver in strong solution.

LECTURE XXXIX.

SYPHILIS.

The term syphilis is used to designate a class of diseases produced by a specific poison, which is generated during the disease and propagated by contact. As regards the character of the virus we know nothing, further than it cleverly resembles the poison of other contagious diseases in many respects. It acts in the most minute quantity, as well as in large amount, and differs from the organic poisons of similar character, in that its influence is protracted and in some cases permanent, and instead of manifesting a definite set of phenomena, and being then eliminated, it seems to change its character with time, and gives rise to many different forms of disease.

Though the disease undoubtedly arises from prostitution, it is now generally admitted that it does not now arise *de-nova*, but is invariably the result of inoculation with syphilitic virus. This virus is contained in pus, generated by syphilitic inflammation, and in no respect that we can discover does it differ from the product of ordinary inflammation. Thus the pus may be thin, thick, ropy, creamy, yellow, greenish, white, transparent, opaque, bland, acrid, plastic, amorphus, alkaline, acid, or neutral; each preserving the contagious element. This pus will retain its virulent properties for many weeks, if excluded from the air, and Sperlino gives a case where the matter, dried upon the point of a lancet, was successfully inoculated after seven months.

It is generally supposed that this pus is only formed by primary sores, called chancres, and that other syphilitic lesions do not produce the virus. This, however, is a disputed point, and I am inclined to the opinion that it is not correct, though we will have more to say of this hereafter.

The syphilitic virus is communicated in different ways, but we will find, in a very large majority of cases, that patients get it in the *natural way*, by sexual intercourse. If, however, the virus is brought in contact with a mucous membrane, or any abraded surface, syphilis will result, whether this has been done by the fingers, by linen, dressings, towels, surgical instruments, sponges, a privy seat, chamber utensil or bed covering. A surgeon meets with many cases in which the person denies having contracted the disease by connexion, but it is only in rare cases where those other means have been the cause of it. I have known chancre of the hands contracted by dressing chancre of the penis, and by attendance upon a woman in labor suffering from the disease; chancre of the lip contracted from kissing; but these are exceptional cases, and we may safely assume that chancre of the genital organs is the result of sexual congress.

As regards its action at first, there is a difference of opinion. Some claim that it is at first purely a local disease, the syphilitic poison being confined to the ulcer, where it may be destroyed. Others contend that absorption of the poison first occurs, and that chancre is the manifestation of that poison from the blood. I take the first view of the question, and feel entirely convinced that it is the correct one. Still the syphilitic virus may be soon absorbed from the chancre, may in fact be absorbed from the mucous surface before the chancre is formed, and impregnation of the system thus occur at a date so early as to render futile the usual abortive measures.

In the description of syphilis we may properly divide the disease into two forms, *primary* and *secondary*—the first embracing the period of the chancre or original sore; the second the constitutional effects of the syphilitic poison when absorbed.

Primary Syphilis.

In the consideration of primary syphilis we are met with a difficulty at the very threshhold of the subject. All good authorities have recognized two forms of chancre—the *soft* and *hard or indurated*, but of late it is urged that soft chancre is an entirely distinct disease and does not give rise to secondary accidents.

The reader may say, is not this a matter susceptible of proof, and could it not be determined in a short time? No man familiar with syphilis would put such a query, for we well know that many times it is difficult to determine whether a chancre is hard or soft; and the advocates of the new doctrine use the summary argument that has been so often applied to cancer: if it is a cancer it is incurable, if you have cured it it was no cancer. So in this case, they say, if the system was infected it was an indurated chancre, as soft chancre will not infect.

CHANCRE.

It will be well to study the pathology of chancre at some length, and then examine the two marked varieties. I can not do better here than to quote from Mr. Erichsen:

"When chancres are caught in connection, they usually commence with a small excoriation, which appears to have been directly inoculated with the specific poison. In other cases, again, though more rarely, they may be seen at first in the shape of a small pointed pustule, which speedily breaks, leaving an ulcer of a specific character in its site. Very generally, however, this pustule escapes observation, and the disease is presented in the first instance as an ulcer. The chancrous ulcer, whatever form it assumes, seldom makes its appearance until a few days—five or six—after connection. In some cases, however, I have observed it, evidently from the infection of a fissure or crack, on the day following impure intercourse, and, occasionally, in rare instances, it does not occur until a much later period than that which has been mentioned.

"Whatever may be the appearances presented by a chancre, there can no longer be any doubt that the disease arises from one kind of virus only, the modifications in the sore depending on its situation, the constitution of the patient, and occasionally on that of the individual who communicates the infection. That this is so, is evident from the fact that any chancre, when inoculated, reverts to one typical form, and that, however much chancres may ultimately differ, they all present the same characters during their early stages. The progress of a chancre that has been artificially inoculated on any part of the cutaneous surface is as follows, and its study will serve to elucidate what takes place under other circumstances. During the first twenty-four hours after the introduction of the specific pus into the skin on the point of a lancet, we find that some inflammation is set up around the puncture, which becomes hot, red, and itchy. About the third or fourth day, a pointed pustule is produced, which is at first deep-set, but becomes on the following day more superficial, with some depression in the center, resembling pretty closely a small-pox pustule; on close examination this will be found not to be a true pustule, but rather a mass of epithelial scales and pus not included in a distinct wall. On the fifth day it has become hard at the base, apparently from the infiltration of plastic matter, and on the sixth, it has usually dried, forming a small round scab, and leaving an ulcer, which presents the typical characters of a true chancre, being circular and depressed, with a foul, grayish surface that can not be cleansed, sharp cut edges, a hard base, and an angry looking red areola around it. This is the typical chancre, and these are the appearances that every true syphilitic sore on the skin will present, about the fifth or sixth day after inoculation; from this time it may diverge more or less completely from these characters, but will yet, if inoculated at any time during the poisonous stage, produce an ulcer that will run the specific course up to the same period, after which it may in its turn again deviate into one or other of the special forms that chancres occasionally assume. When inoculated on a mucous surface, chancres do not so early assume an indurated character around their base."

SOFT CHANCRE—CHANCROID.

Soft chancre, it is said by those who claim that it is a distinct disease, is produced by the virus of a soft chancre, in fact that the one never propagates the other. It is found in a large majority of cases on the glans and prepuce, though it may affect any other part; thus Fournier reports that out of 343 chancroids, 296 were of the glans and prepuce. It is usually developed soon after exposure, in fact it is claimed that it has no period of incubation. At first it is observed as a white or yellowish-white vesicle, with reddish areola, but little elevated above the surface. This shortly ruptures, and we have a minute but well defined and deep ulcer, which extends with greater or less rapidity, and almost always develops new ones by its secretion. By the end of the first week, it will have attained the size of a three-cent piece, sometimes not so large, irregular in form, edges abrupt and well defined, and surface covered by a grayish secretion. In this form of the disease, the secretion is generally abundant, and when there are several sores, and phymosis, it resembles a clap in the quantity of discharge.

This form of chancre never has a hardened base or edges, or if so there is distinct evidence of inflammatory action. This is the typical chancroid, but in practice we find chancres with various grades of induration, so that it is difficult to tell when the soft chancre stops and the indurated begins. One of the most prominent characteristics is its rapid propagation until in some cases the entire prepuce or glands is involved in the disease. In many cases effusion takes place into the cellular tissue of the prepuce, which becomes greatly swollen, and phymosis ensues.

The *phagedenic* chancre belongs to this species; in fact it is stated by our best authorities that an indurated chancre never becomes phagedenic. In this case the process of ulceration goes on with great rapidity, entailing more or less extensive loss of tissue. The prepuce is more frequently affected by phagedena than the glans, and is sometimes perforated, at others almost destroyed. In some of these cases the surface of the chancre is red, tolerably clean, and surrounded by a reddish areola. In others it is covered by a pultaceous material, under which the ulceration progresses unobserved. In some of these cases, the patient suffers with severe pruritus, and hot and stinging sensations, and occasionally, when the destruction is great, with excessive neuralgia.

INDURATED OR HUNTERIAN CHANCRE.

The typical Hunterian Chancre arises like the others, but in a few days its base becomes hardened by effusion of plastic lymph. The induration is distinct from the adjacent tissues, in which it seems imbedded, in shape and size very much like a split pea, and is somewhat elastic like cartilage. If upon the prepuce, it may be grasped and moved in any direction, seeming more like a tubercle than anything else. In a majority of cases it assumes a circular form, is very rarely irregular, and its cavity is cup-shaped, with smooth edges, sometimes slightly overhanging. It secretes but little pus; in many cases the bottom of the ulcer is covered with a grayish plastic matter, but in others the entire surface is smooth, and with scarcely any secretion. The edges are sloping, hard and elastic.

In one form of the disease the chancre seems raised above the adjacent tissues, *ulcus elevatum.* According to Vidal, "the base is raised by a kind of vegetation of the form of a rounded or oval basin, of a fungous nature. They occur frequently upon the edge of the prepuce, furnish a sero-purulent matter, generally not painful, and their borders and base but little painful."

The quotation from Mr. Erichsen describes a majority of chancres met with. They are not the typical indurated chancre, and yet there is some induration, which is manifest after the sixth day. They do not furnish the abundant secretion of soft chancre, and yet are constantly bathed in pus, which is not the case in the typical chancre above described.

The hard chancre almost always leaves some induration after it has healed, marking its situation for months, sometimes for years. The common form in which the induration is less marked, may or may not have induration, depending somewhat upon the treatment. The chancroid rarely if ever leaves induration.

DIAGNOSIS.—It might seem from what has been said that the diagnosis of chancre is easy, and so it is to the expert who has made the disease a special study. But to others it is sometimes a matter of much difficulty. Ulceration simulating chancre sometimes occurs in bolano-posthitis, and occasionally ulceration of the follicles back of the corona, resembles it. If, however, the part be closely examined, bearing in mind the description of the disease as above given, a mistake can not occur. To avoid error, it is best to treat all suspicious cases upon the genitals, as if they were syphilitic. Secondary syphilitic ulceration may be determined by the existence of other symptoms of constitutional infection.

In urethral chancres mistakes are frequently made, as the disease simulates gonorrhea. Yet in this case it will be noticed that many of the symptoms of gonorrhea are absent, the discharge is not so great, and close examination will detect induration. In other, though rare cases, a chancre of the lip, hand, or anus, may not be recognized, for the simple reason that the disease is not looked for in those places.

Occasionally a case will present itself in which the patient has decided secondary symptoms, without ever having been aware of having had the primary disease. In some of these cases, the chancre is small, secretes but little, is not noticed, and in a week or so nothing but a slight induration can be detected by the practiced eye. In others, the virus is no doubt absorbed without ulceration, and the only evidence of the primary disease is induration of the lymphatic glands, sometimes very slight.

Thus, we must agree with Vidal when he says: "Sometimes it must be acknowledged, that notwithstanding the most minute attention to details, and the greatest power of grouping them in one assemblage, which shall represent their diagnosis, the latter still remains obscure, and our doubts are removed only by the appearance of certain consecutive accidents. The young practitioner should therefore be very cautious in announcing his opinion, especially in courts ot justice. It is important that he be forwarned, not only that observation may lead to mistakes, but that he should also understand the errors which may result from experiments.

INOCULATION.

John Hunter proved by experiment that the virus of primary syphilis was inoculable, and thus proposed to distinguish this from the secondary stage, and from non-virulent affections. Ricord pursued these experiments with that zeal that characterized all his efforts, and at last taught the dogma that primary syphilis was always inoculable, that no other form of the disease could be thus transmitted, and that if inoculation did not succeed, the disease was not syphilis. Inoculation was thus practiced to a very considerable extent as a means of diagnosis. Some of Ricord's propositions, however, are disputed. It is stated that even some cases of infecting chancre can not be transmitted by inoculation, and further, that in some cases the secondary disease may be thus transmitted. Still, as a general rule , we may safely rely upon his proposition, that if it is susceptible of inoculation it is syphilis, if not, it is some other affection.

Inoculation is very easily performed, and rarely occasions any trouble. I object decidedly, however, to inoculating second parties. As in vaccination, raise the epidermis with a common lancet and insert the pus from the chancre; if it is desired to study its progress, it should be covered with a small watch crystal, fastened with adhesive plaster. The various stages of the inoculated chancre have been heretofore described.

BUBO.

By the term bubo we understand an engorgement of the lymphatic glands, first above the seat of the chancre, attended with more or less induration. As the common seat of the chancre is upon the external genitals, we find the bubo located in the groin, and as it is so generally associated with syphilis, many persons think that any affection of the glands of this region must be venereal. This, however, is not the case, as they may become affected from common irritation or inflammation of adjacent parts.

In chancre upon the penis or vulva, the bubo most generally appears upon the affected side, but not always, for we occasionally see it upon the opposite side. In chancre of the hand, the bubo or enlarged gland will be found at the elbow, and in chancre of the lip, it will be found under the inferior maxillary.

It is claimed by late writers on syphilis, that as a general rule the bubo of *chancroid* always suppurates; but that of the hard chancre very rarely does so, but simply remains indurated for a considerable time. And carrying the doctrine still further, some have claimed that chancre with suppurating bubo does not infect the system, while if it is indurated and does not suppurate, the system will surely be affected.

These doctrines though containing some truth, can not be depended upon, though by specious arguments they have seemed to gain ground. I am positive that I have known infection from soft chancre when there was no bubo, and when there was, and it suppurated. Of course no man has had experience that would prove non-infection from non-suppurating bubo. The facts are, that soft chancre is usually attended with such a high grade of inflammatory action of the lymphatic glands, that the tendency to suppuration is very strong, while in hard chancre the tendency is to effusion of lymph; yet suppuration does frequently occur and sometimes is very severe.

The symptoms of bubo are usually very plain. Some five or six days after the commencement of the sore, if the finger is passed over the inguinal region, a slight enlargement of one or more glands will be observed. They are not adherent to adjacent tissue, but more freely under the skin, and are generally slightly tender on pressure. They enlarge with greater or less rapidity, in some cases a week or move will elapse before inflammation fairly sets in, while in others it progresses with great rapidity.

When the glands attain the size of a cherry, inflammation is set up, they are tender on pressure, and painful when the patient is on his feet or walking. In soft chancre the inflammation increases rapidly; adjacent glands become involved, until the swelling will in a week attain the size of a hen's or goose's egg, very sensitive to pressure, painful in walking, or sometimes when lying still. If the part is examined it will be found red, sometimes dusky or livid, and the temperature and sensibility increased. In some cases the inflammation is very high, and all the symptoms severe, the patient suffering very much and being confined to his room. In no case can we determine with much exactness as to the future progress of the disease. Sometimes suppuration is very rapid and only a few days elapse before the pus points; but in others week after week will drag along, and when the abscess is opened suppuration is but partial.

In some cases the pus formed resembles laudable pus, and when discharged either by natural process or by puncture, the pain, soreness and inflammatory symptoms subside, and the abscess heals kindly. In others the pus discharged is thin, serous, flocculent, and keeps flowing away without very much abatement of symptoms or tendency to heal. In still others, the swelling of adjacent glands and structures remain, and a process of ulceration goes on until a large foul ulcer is formed in the groin. Occasionaly suppuration occurs at different points, and pus is discharged from several openings, giving, in bad cases, a honeycombed appearance to the groin. In these severe cases the disease at this point may continue for three or four weeks, or as many months.

In *indurated chancre*, as has been already remarked, there is not the same tendency to active inflammation, and a simple enlargement and hardness of the glands, lasting for a month or two is all that is observed. At other times the glands enlarge more, become tender on pressure, and cause pain in walking, but finally with the cure of the chancre the enlargement subsides. In others, inflammation becomes active after a time, and suppuration occurs, presenting the same symptoms as heretofore named.

Some buboes furnish a virus capable of producing chancre by inoculation, but others preserving all the characteristics of the specific disease, do not give this result.

Diagnosis.—We have to distinguish bubo from hernia, both inguinal and femoral, and though generally easy, sometimes difficulty will be experienced. If the case is seen at an early day, the mobility of the gland, and the absence of succussion upon coughing is sufficient. At an advanced stage, the dusky redness or lividity, thinness of the skin, and long duration of the disease are sufficient. The presence of a chancre, or evidences of their having been one, is the best proof of the syphilitic character of the glandular disease. The presence of a boil, wound, injury, or local inflammation of a part near, or having lymphatic connection with the glands, is evidence of its simple nature. There are cases, however, in which the best observer will be at fault, and will have to wait the development of symptoms before giving a decided opinion.

TREATMENT OF PRIMARY SYPHILIS.

As will have been noticed from the preceding description, the disease presents itself under so many forms, that a rational treatment must adapt itself to each variety of lesion or stage of the disease. Hence we will take up the different parts, and adapt the treatment to each condition.

Chancroid.—In many cases soft chancre is very easily cured, but in others it is stubborn. The first object here, as in other cases, is to destroy the specific character of the sore, and convert it into a simple ulcer. To effect this, various escharotics are employed, some being good, while others are inefficient. The not uncommon practice of using Nitrate of Silver is to be condemned, as it rarely, if ever, destroys the specific character of the sore. The same may be said of Tincture of Muriate of Iron, and other feeble agents. I frequently employ the Chloride of Zinc paste made according to the following formula: ℞. Chloride of Zinc ʒj, Pul. Sanguinaria ʒj, Sulphate of Morphine gr. x, water, a sufficient quantity to form a paste; pulverized Hydrastis, Slippery Elm, or flour may be employed instead of the Sanguinaria. This paste is applied the thickness of a knife-blade, to cover the entire chancre or chancres, and covered with a soft piece of cotton cloth, and allowed to remain for two hours. Nitric Acid is a good escharotic, applied with a pine stick so as to reach the entire affected surface. The stick Potassa-cum-calce, or Potassa fusa, may also be employed with success, being careful to limit its action to the affected part.

The object is to effectually destroy the secreting structure, and each sore needs to be cauterized, otherwise when the sloughs are cast off the simple ulcer left may be again infected. This is a very important point in the treatment, and should be borne constantly in mind. Early cauterization is desirable, as in many cases the disease propagates itself rapidly, and in others the swelling of the prepuce is such in a short time that the chancre can not be reached.

The treatment after cauterization will vary in different cases. In many I order a dressing of Mayer's Ointment, spread on soft cotton and applied to the sores, changed morning and night. If there is much inflammation following the action of the caustic, a poultice of equal parts of Ulmus Fulva and Hydrastis may be used until the slough separates. In other cases it is good practice to use stimulant and astringent lotions, as ℞. Port Wine ℥iv, Tannin ʒj: or ℞. Port Wine f℥iv, White Sugar ʒij; or ℞. Solution of Persulphate of Iron ℥ss, Water ℥iijss, or ℞. Chlorate of Potash ʒj, Sulphate of Zinc gr. x, Water iv.

In many cases these dressings may be continued after the slough separates, and until the ulcer is healed. The stimulant and astringent washes do best when the tissues are relaxed and the sores not irritable—the Mayer's ointment where there is a simple ulcer without much secretion. In cases where the secretion is profuse, a dry dressing is frequently of most service. The Sub Nitrate of Bismuth sprinkled on the sore will answer the purpose well.

If the chancre assumes a *phagedenic* character the treatment will have to be varied. Some practitioners rely mostly on thorough cauterization with Nitric Acid, which is sometimes good practice. A solution of Permanganate of Potash gr. v, to Water ℥j, is good; as is a solution of Carbolic Acid, one part to eight of water. In using these, the ulcer should be thoroughly cleansed, and then kept constantly covered with lint saturated in the solutions. Covering the ulcer with finely powdered Sulphate of Zinc sometimes answers well, as does finely powdered Loaf Sugar used in the same way. Persulphate of Iron occasionally acts well, used the full strength of the solution at first, and afterward diluted with two to four parts of water. When the phagedena is arrested, the ulcer should be dressed with stimulant and astringent lotions, or if there is much secretion, with the dry dressing.

In all cases of phagedenic chancre, strict attention should be paid to the general health. Give the Compound Podophyllin

Pill to gently open the bowels, and put the patient upon the use of Quinine, Hydrastine, and Iron, and advise a highly nutritious diet, animal food being preferable. The use of the salt-water bath with brisk friction is also important.

Occasionally a case presents itself in which the prepuce is so swollen as to produce phymosis, and the chancres can not be reached. Of course the abortive method by cauterization is impossible in these cases, unless the prepuce is slit up, or circumcision performed, which is not usually advisable. These prove very troublesome many times, and are tardy in getting well. I generally treat them in the following manner: First, thoroughly cleanse the parts under the prepuce by injecting Castile-soapsuds, or a weak solution of Chlorate or Permanganate of Potash. Then take Mayer's Ointment, made strictly according to the Dispensatory, and saturating pledgets of cotton or lint with it, introduce it between the prepuce and glans so as to bring the Ointment in contact with the entire surface. This dressing should be changed twice daily, and continued until the ulcers are healed. But few cases resist this method, and in these we will have to depend wholly on washes. Those just named answer well; or we may use a solution of Sulphate of Zinc gr. xv, Morphia gr. v, Water f℥iv; or a strong decoction of Baptisia Tinctoria; or a decoction of equal parts of Rumex, Alnus, and Quercus Rubra. A lotion of Acetate of Lead applied to the prepuce is sometimes of service in removing the effusion. The bowels should be kept open with Jalap and Bi Tartrate of Potash, and the secretions from the kidneys and skin free.

In the treatment of chancroid, if the general health is good, there is no need for general medication, especially for alterative syrups, Iodide of Potash, etc. It is important, however, that all the functions be properly performed, and if we observe constipation, scanty urine, diminished secretion from the skin, or imperfect digestion and nutrition, these must be looked to.

INDURATED CHANCRE.

In this form of the disease, we fear most the tendency to constitutional infection, and the object of early treatment is to prevent this. Many authorities claim that the syphilitic virus is not absorbed until the chancre becomes a secreting sore, a period of from two to eight days elapsing in which the disease is entirely local. If now, by any means, the specific sore is destroyed, they say, there is no danger of constitutional syphilis. Hence the treatment for chancre is termed *abortive.* Others claim that the chancre is but the manifestation of the syphilitic poison from the blood, the poison having been absorbed. Hence constitutional infection can not be prevented by any local treatment. When there is such difference of opinion among good observers, we may safely conclude that the truth is a mean between the two. Thus, I am satisfied that in some cases the syphilitic virus is so speedily absorbed, that there is no chance for abortive treatment. But in a larger number of cases the system does not become infected for some days, and in these the entire destruction of the chancres prevents infection.

If there is but one chancre—and this is small and situated on the prepuce—the simplest and best plan is to remove it by excision. Cleansing the chancre thoroughly with soap and water and clean towel, grasp it with the finger and thumb nail below the induration, and excise it with a sharp bistoury. Of course strict attention must be paid to cleansing the parts, for if the minutest portion of virus come in contact with the excised surface, the chancre would be reproduced in a much more severe form. But when done according to direction it must succeed, and the wound heals as speedily as any other clean incision.

Escharotics are the means usually made use of to abort the disease, and to accomplish this they must be employed before absorption takes place, and entirely destroy the specific character of the sore. It is most absurd to be continually using caustics after the second week, or when enlargement of the glands is felt, unless it is done for the purpose of more speedily healing the ulcer; and yet we find such practice frequently extending over a period of months. If a first thorough cauterization does not remove the induration, and change the chancre to a simple ulcer, it will not usually be accomplished by repetition.

In these cases I prefer one of the three following remedies: Chloride of Zinc Paste, Potassa-cumc-alce, or Nitric Acid. They are used as directed for chancroid, carrying their action so far as to entirely destroy chancre and induration. It is bad practice to half cauterize these chancres, as the specific sore is not destroyed, but rendered more perverse and less amenable to remedies, the induration being increased. It will sometimes require more than one application to accomplish the purpose, but if it can be used, one will generally suffice.

A water dressing, or a poultice may be employed while the slough is separating, or the sore may be dressed with Mayers' Ointment. After this, we treat it as has been named for soft chancre. Some cases get along better with the use of the wine lotions, others require dry dressings, with Bismuth, and still others heal rapidly under the application of Mayers' Ointment. If cicatrization progresses slowly, and the circulation is sluggish, or the granulations too large, the occasional use of the stick Nitrate of Silver will be found useful.

In the *elevated* chancre I employ the Chloride of Zinc paste, to thoroughly destroy it, and then dress it with Mayers' Ointment, occasionally using the solution of Carbolic Acid, or Permanganate of Potash. In the *serpiginous* form, the solution of Persulphate of Iron, or Tincture of Muriate of Iron will be found good, and as a common dressing a solution of Potassio Tartrate of Iron, ℥v, to Water Oj. Tincture of Iodine sometimes proves useful in these cases, or we may combine it with an equal part of Tincture of Iron. Especial attention to the general health is necessary in this form, Quinine, Iron, and a nutritious diet being indispensable.

General Treatment.—While we did not consider special medication necessary in soft chancre, in this form of the disease we consider it of prime importance. We have already seen that the constitution becomes affected at least by the eighth day, and that after this the abortive treatment is useless. If this is so, and it can not be disputed, we have something more to do, than simply heal the chancre, as many imagine. We must stimulate the removal of the virus from the system, or destroy it within, the first can be readily accomplished, but we have no specific that will effect the second.

Medical men like a treatment that requires no thought, and will adapt itself to every condition. Our old-school friends, many of them, are loth to believe that mercury is not a specific for syphilis, it was so easy to administer the remedy, which was adapted to all cases, and would grapple with the disease in any part of the body. Those who reject mercury, replace it with the class of alteratives which they suppose will find the poison and remove it in some inexplicable manner.

If we are to succeed in the treatment of syphilis we must have some well defined plan of action, and give remedies for the accomplishment of certain results. We have no just grounds to look upon any remedy in our materia medica as a specific to the poison of syphilis, and the sooner we realize this fact the better for our practice. What then are the indications, and how may we best fulfill them?

Like all other animal poisons the virus of syphilis is removed by the excretory organs, and as in analagous cases the poison affects those tissues, the vitality of which are impaired, rapid metamorphosis of tissue should be stimulated that these parts may be removed, and replaced by new material. All the evidence that has accumulated on the subject of syphilis goes to prove the truth of these propositions, and they are acted upon by the most successful practitioners in this disease.

To accomplish the objects named, I would put the patient upon the use of a pill composed of ℞. Podophyllin, gr. x, Hydrastin gr. xx, Quinine, grs. v, Ext. Nux. Vomica, iij, Valetta Mass. ʒss. Make twenty pills, of which one may be taken two, three, or four times a day, so as to give a couple of actions from the bowels daily. Let the patient take a daily bath, using soap and water with brisk friction, and if this is not sufficient to get good action from the skin, use the vapor bath two or three times weekly. If the kidneys act well, this will be sufficient; if not, give ʒss Acetate of Potash in a tumbler of cold water three times a day. In some cases the pills will have to be suspended from time to time, and the patient placed on the use of the Restorative Wine Bitters, with Iron, or Nichols' Elixir of Peruvian Bark and Iron.

Under this treatment the patient should have increased appetite and power of digestion, and to replace the rapid waste, a highly nutritious diet should be advised, of beef-steak broiled, roast beef, mutton chops, soft boiled eggs, milk, etc. We intend to renew the body as rapidly as possible, and to obtain as high a degree of health as is possible, and by the time the chancres are healed, the patient will be in vigorous condition, and the syphilitic poison thoroughly removed.

I wish it understood, that I object decidedly to the use of alterative syrups and Iodide of Potassium in this stage of the disease, as inefficient to effect the objects named, and a waste of invaluable time to the patient. They will, however, be recommended hereafter in their proper places.

TREATMENT OF BUBO.

Taking the ground that the non-suppurating bubo is followed by constitutional symptoms, some practitioners use means to favor suppuration rather than to discuss the enlargement. It is an error in practice readily accounted for by the nature of the disease, as has been heretofore named, the soft chancre giving rise to suppurating bubo, the hard chancre to indurated bubo. I take the ground that it is good practice to discuss the swelling in all cases, as the patient can not be benefited by the suppurative process in the groin. If the system becomes infected at all, this occurs at the commencement of the swelling, and both experience and analogy teach us that the most minute quantity of syphilitic virus is equivalent, when introduced into the blood, to the total secretion of the chancre. And as no person claims that the suppuration of the glands removes the poison already introduced, there can be no good reason for not arresting it, if possible.

Various plans for aborting a bubo have been recommended, but I prefer one of the following: The application of Collodion so as to shield the action of the air, is very efficient: In order ℞. best Collodion ʒj, Chloroform ʒj; to ʒij. Shave the part, and apply the liquid over a space of two or three inches with a camel's hair-brush, until a thick coating is formed. In a couple of days this may be removed and the Collodion reapplied. Another very good application is made by dissolving gutta percha in chloroform, and applying it in the same manner. Or, in the first stage, we may frequently effect its removal by the use of revulsives, as ℞. Chloroform, Benzine aa ʒj, Alcohol ℥ij; two or three thicknesses of lint or cotton cloth being rung out of hot water, this lotion is sprinkled on it and pressed firmly over the bubo. The most common practice is the repeated application of Tincture of Iodine over the bubo; when I employ it I add half a part of Tincture of Aconite root.

The means named should be assiduously employed while there is hope of success. And in addition we use such general means as experience teaches will contract the inflammatory process, keeping the bowels open, strict attention to the skin, the alkaline diuretics are important, and we must not forget that rest of the part is indispensable in the severer cases.

If, however, the inflammatory process progresses notwithstanding these means, for four or five days, especially if the skin covering the bubo becomes dusky-red or purplish, and thinned, we need not hope to succeed, and we adopt measures to promote suppuration. Some practitioners employ fomentations, others prefer poultices, each of which will prove beneficial. As a poultice we may use Ulmus Fulva, flaxseed, bread and milk, or other simple agents If we wish to hurry the process, we will find nothing better than grated carrot mixed with milk or water, or we may add a portion of powdered charcoal. If the inflammation is extensive, a decoction of Cornus thickened with wheat bran answers a good purpose.

As before remarked, the suppurative process is not unfrequently very slow, and we will often find that suppuration takes place at a limited point, while the inflammatory process progresses around it. I hold it to be good practice to open the abscess as soon as evidence of accumulation of pus is observed, and not wait for the suppurative process in other parts. In most cases we will find that by thus early discharging the pus, the inflammation gradually subsides, and but a small portion of the structures are broken down, while if we had waited there would have been great destruction and a large abscess difficult to heal.

As a dressing, after lancing the part, we may use Mayer's Ointment, spread on soft muslin or leather of considerable size, a hole being cut opposite the opening of the abscess. Dr. McCarthy's Soothing Ointment is also an excellent application, and as it is one of our best preparations, I will give the formula for it: ℞. Simple Cerate, Resin, Beeswax, āā ℥j, melt together in a vessel, and when thoroughly mixed pour in a porcelain mortar; and, while cooling, add of Gum Camphor ℥j, Tincture of Opium ʒiij, Turpentine ʒij, Oil of Peppermint gtt xv, stirring until cool. The Elder Ointment, or Black Salve, may be used in the same way as the Mayer's Ointment, with good results.

As a general rule, if the treatment has been conducted as I have described, the case will progress without trouble; but occasionally it is difficult to manage. Suppuration having occurred, and the abscess opened, adjacent parts break down, the opening increases in size, the skin thins around it, and the entire abscess in a sloughy condition, we may thus in time have a foul ulcer an inch or two in diameter, showing no tendency to heal. It has been recommended to use the Sesquicarbonate of Potash or Sulphate of Zinc, in strong solution, in these cases; but, though sometimes successful, I do not like the practice. Let the part be kept thoroughly cleansed with Soap and Water, give the attention to the general health heretofore directed, and apply the Mayer's or Soothing Ointment, and you will succeed well in very severe cases. If more is needed, paint the edges, or even the entire ulcer, with equal parts of Tincture of Iodine and Tincture of Muriate of Iron, or a solution of one part of Carbolic Acid to eight parts of Water, or a solution of Permanganate of Potash five grains to the ounce of Water. These last may be used as an injection also. A strong decoction of Baptisia, Cornus or Hydrastis, sometimes answers a good purpose.

The lividity and induration remaining after the healing of the bubo is got rid of slowly—sometimes months elapsing before its removal, at others years. To facilitate this process, it has been recommended to use an ointment composed of Simple Cerate, Camphor, and Iodide of Potassium, or the Elder Ointment with the addition of Camphor.

SECONDARY OR CONSTITUTIONAL SYPHILIS.

Syphilis, as we have already seen, is, in a majority of cases, a strictly local disease at first; but, in a longer or shorter time, the virus is absorbed by the lymphatics or bloodvessels, and the entire system becomes infected. It is sometimes difficult to account for it, as parties protest that they never had chancre, and no marks of it can be found. Yet if we bear in mind, that many times the infecting chancre is small, superficial, and causes no uneasiness, we may readily see that it may have escaped the person's notice, or have been regarded as a simple abrasion. Many cases of chancre get well in a few days without treatment, or they may continue as a slight indurated sore for months, without secretion, or causing the person any uneasiness, and, when unacquainted with the affection, any thought of syphilis. In other cases the primary sore is concealed, situate within the urethra, or a fold of the vulva or anus, or in some situation where it would not be suspected, as upon the lip, hand, etc.; in such cases it may run a regular course without suspicion.

The evidence, however, is growing stronger that secondary symptoms may be transmitted from one another, under peculiar circumstances. Thus it is now claimed that a party having the constitutional infection may have intercourse with another for a long period without injury, but that some local irritation of the parts from other causes will so concentrate the syphilitic infection that it will be contageous. Thus Vidal remarks: "As to the transmissibility of the secondary accidents, aside from hereditary descent, the doctrine is proved by the fact of the infection of the nurse by the child affected with consecutive tubercles, and the contagiousness of the mucous tubercle in the adult; it has been proved by the experiments of M. Cazenave, Wallace, Walter, M. Bouley, M. Richett, M. Litthman, by my own, and by those of other experimenters. Under the head of mucous tubercles, experiments have already been mentioned, and when we come to treat of the pustular syphilida we shall find certain facts which leave no doubt on the subject. The distinction, therefore, between the primary and secondary accidents, which rest on their transmissibility—a distinction to which so much importance has been attached—is destroyed both by experiment and clinical observation. Both primary and secondary accidents are inoculable."

The virus of syphilis, like other contagious diseases, has a period of incubation in which some of its effects are manifested. If no general treatment has been employed, the first of the secondary symptoms occur, at a somewhat regular period, the mean being about fifty days. In fifty-two cases recorded by Diday, the earliest symptoms appeared in twenty-five days; the greatest length of time elapsing was one hundred and five days. In one hundred and seven cases reported by Bassereau, fourteen occurred between twenty and thirty days, sixty-six between thirty and forty, twenty-three between sixty and ninety, three between ninety and one hundred and twenty, and one in the fifth month.

General treatment modifies the disease so much in some cases that this period is greatly protracted, sometimes to months, at others to years. The first symptoms are sometimes so slight and evanescent that they are not recognized by the patient, and this is also a cause of error. The following table compiled by Mr. Martin, will show the usual development of the more common syphilitic lesions:

SYMPTOMS.	Date of usual development.	Date of earli'st development.	Date of latest development.
Roseola	45th day.	25th day.	12th month.
Papular eruption	65th "	28th "	12th "
Mucous patches	70th "	30th "	18th "
Secondary affections of the fauces	70th "	50th "	18th "
Vesicular eruption	90th "	55th "	6th "
Pustular eruption	80th "	45th "	4 years.
Rupia	2 years.	7th month.	4 "
Iritis	6th month.	60th day.	13th month.
Syphilitic sarcocele	12th "	6th month.	34th "
Periostitis	6th "	4th "	2 years.
Tubercular eruption	3 to 5 years	3 years.	20 "
Serpiginous eruption	3 to 5 "	3 "	20 "
Gummy tumors	4 to 6 "	4 "	15 "
Onychia	4 to 6 "	3 "	22 "
True exostosis	4 to 6 "	2 "	20 "
Ostitis, changes in the bones and cartilages.	3 to 4 "	2 "	41 "
Perforation or destruction of the velum palati	3 to 4 "	2 "	20 "

Diagnosis.—The different manifestations of secondary Syphilis will be considered in detail hereafter, and we now wish to consider only the general characteristics of the disease. In a large majority of cases, the first manifestation of it is in the form of an exanthematous eruption upon the skin, frequently as an erythema or roseola, which may be attended with fever. This eruption fades in the course of from two to six days, and leaves the skin dingy, dusky, or dirty. Following this are *maculæ*, at first dusky red, but assuming soon more or less coppery discoloration. They appear first upon the cheeks, nose, forehead, inside of the arms and thighs, and upon the back Shortly they are associated with lesion of the mucous membrane, as sore throat, passing to ulceration, small excoriations of the lips and edges of the tongue. At a later stage, the hair commences to fall—alopecia, and other of the accidents hereafter named. Dr. Tilbury Fox gives the following points as aids to diagnosis:

"The syphilitic poison once introduced into the system is apt to be followed by certain eruptive manifestations: these are only the naked-eye evidences of a deep-seated change in the system at large. The functions of various organs are deranged, the blood is charged with a poisonous principle, and all the organs and structures supplied with that blood suffer to a greater or less extent. The brain evinces its suffering by mental dejection; the nerves by a general feeling of prostration and debility . . . . there is often a neuralgia (nocturnal) . . . . the pulse is quickened . . . . the tongue coated, white, broad and indented by the teeth. The fauces are more or less congested, the tonsils and soft palate being frequently swollen; there is irritation of the larynx, producing a mucous cough and often nausea . . . . the conjunctiva is congested and muddy, and the whole skin remarkable for its yellowish and dirty appearance, looking as if saturated with impure and discolored humors.

"Syphilitic eruptions have certain peculiarities:

"1. There is *a history of syphilitic inoculation*, which tells its tale by the numerous symptoms (due to the circulation of the poison), noticed at the opening of this chapter: and, in addition, by the presence of cicatrices, indurations, scars, and stains about the penis and groin.

"2. *Their color.*—It is described as copper colored; in reality "*a reddish-yellow brown*" (Wilson). It is dull red at first, and becomes coppery after awhile, and as the eruptions vanish, a dull red or yellowish dirty stain remains for a varying length of time. In the early stages of disease the tint may be violet, but this soon becomes replaced by the coppery hue.

"3. *Their form*, which is peculiarly circular. This feature is not perhaps of much moment, *per se*, but in conjunction with other points is of some aid in a diagnostic sense. It may be destroyed or prevented by the confluence of other patches, but even then the typical form can be recognized in the component parts of the patch of disease. Syphilitic *scaly* eruptions are composed usually of small circular spots. Scales or squamæ are thin, oftentimes very fine, gray, and a few in number; fewer and lighter than in the typical aspects of eruption. Crusts are thick, greenish, or black, and firmly adherent. Vesicles are flattish, and do not readily rupture. Ulceration is a common feature; the ulcerated surface is ashy gray, covered with a pultaceous substance, and bounded by sharply cut edges. Cicatrices are whitish and reticulated, or dull and brownish, leaving in their place on disappearance a yellowish stain. Fissuring is marked in the squamous forms.

"4. *The absence of Pain or Itching.*—With the exception of mucous tubercles and some forms (moist) of infantile syphilis, syphilodermata are generally unaccompanied by heat or pruritis during their existence. In their tubercular forms, just prior to ulceration, a process of softening, apparently depending upon a low kind of inflammation, goes on, and the tubercles may be painful and tender.

"5. *Their Polymorphism.*—This is very characteristic of syphilitic disease. Several different kinds of eruption may coexist, and this is a rule of general applicability, if we except the squamous class of eruption. It is no unusual thing to see papules, pustules and squamæ coexistent on the same syphilitic subject."—*Dr. Fox on Skin Diseases, p.* 267.

Prognosis.—The most important question in the consideration of secondary syphilis is, whether the poison can be entirely removed from the system, so as to leave the person without a taint. Some writers claim that this can not be accomplished; that the present symptoms may be cured, but that sooner or later they will reappear, or at least the system will remain contaminated. I admit that under a mercurial treatment this is the case, for mercury acts as a mordaunt, and fixes the disease in the system, sometimes beyond the possibility of removal. But under the treatment that I shall name, I am satisfied that the virus can be entirely removed, and the patient will be as well as before contracting the disease.

It is even claimed by good observers, that the natural powers of the system, if not interfered with, are sufficient to effect the removal of syphilis. Thus Dr. Bennett says: "For my own part, I believe that the virus of syphilis, if left to itself, and if the health of the patient be attended to, will generally wear itself out. Unfortunately we are only commencing to observe the natural progress of syphilis, and consequently we are unable to determine how long, under ordinary circumstances, it takes to accomplish this."

General Treatment.—We take up the constitutional treatment of the disease here, because it will be nearly the same for all syphilitic lesions, and in considering these separately we will notice the necessary modification of it, and the local means to be employed.

The poison of syphilis continually reproduces itself, and affects those parts, the molecular life of which is feeble. Thus those persons are most severely affected whose health is impaired, and who contain the largest amount of worn out or devitalized material. We may then claim that it can be removed by getting rid of these old materials, which form its *nidus*, and replacing them with new and highly vitalized material. Experience proves that resistance to diseased action is directly proportionate to the vitality of tissue.

The indications of cure in secondary syphilis are, then: 1st, To stimulate the excretory organs to increased activity, and promote the removal of worn out tissues, the seat of the syphilitic poison; and 2d, To replace this material by other products of a high degree of vitality and well formed. As Chambers well remarks, "It is a renewal of life."

Bearing in mind these principles, we will consider separately the various agencies employed in the treatment of the disease.

MERCURY.

From the days of Paracelsus it has been claimed that mercury is an antidote to the poison of syphilis, and the only remedy that can be depended upon for the removal of the poison. Different practitioners have employed different preparations of the mineral; thus some use the Bichloride, others the Iodide or Proto-Iodide, some soluble Mercury, some Calomel; it is employed by mouth, by innunction, and as a fumigation. We object decidedly to the employment of mercurials in any case, though admitting that certain symptoms yield speedily to their influence. We ground our objections on the facts: 1st, That it is now clearly proven that Mercury will not cure syphilis; 2d, That it tends to fix the syphilitic poison in the system, and prevents its removal by other remedies; and, 3d, It produces symptoms far worse and more permanent than the disease for which it is given. I might give pages of evidence from old-school men in proof of these propositions, if space would permit, but I will only make a quotation from Dr. Bennett:

"The idea that Mercury is a specific for syphilitic poison, and the incalculable mischief it has occasioned, will constitute a curious episode in the history of medicine at some future day. It is now well known that the poison of Mercury produces a cachectic disease and secondary sores in the body, which have been to a great extent mistaken for those of syphilis. It consequently has happened that Mercury, given to cure primary sores, has produced a constitutional disorder closely resembling that of syphilis; more Mercury has then been administered, increasing the mischief, and so the disease has been perpetuated. The real fact, however, is, that the syphilitic poison is no exception to the general rule, which informs us that all contagious diseases of the blood run a certain course, and that we have not yet discovered a specific cure for one of them. The great proof of this is, that the intensity of the disease in modern times has declined exactly in proportion as its treatment by Mercury has diminished, and the disorder been left to follow its natural course. When we treat syphilis on the same principles that we do scarlatina and small-pox, it will prove infinitely less fatal than those disorders."

With reference to the *simple* and *mercurial* methods he remarks:

"Both kinds of treatment have now been extensively tested. In the year 1822, the Royal Council of Health in Sweden having been charged by the king to conduct a series of experiments upon the different modes of treating venereal diseases, reports from all the civil and military hospitals were ordered to be drawn up annually. These reports establish the inconveniences of the mercurial system, and the superior advantages of the simple treatment. In the various hospitals of Sweden, 40,000 cases had been under treatment, one-half by the simple method, the remaining half by Mercury; the proportion of relapses had been, in the first class, seven and a half, in the second thirteen and two-thirds, in one hundred. Dr. Fricke's experiments in the Hamburg general hospital were first made public in 1828. In four years, out of 1649 patients of both sexes, 582 were treated by a mild mercurial course, and 1067 without Mercury; the mean duration of the latter method was 51 days, and that by Mercury 85. He found that relapses were more frequent, and secondary syphilis more severe when Mercury had been given. When the non-mercurial treatment was followed, they rarely occurred, and were more simple and mild when met with. He tells us that he has treated more than 5,000 patients without Mercury, and has yet to seek cases in which that remedy may be advantageously employed. He has never observed caries, loss of the hair, or pains in the bones follow his treatment, and in all such cases which have come under his care, much Mercury had been given.

"In 1833, the French Council of Health published the reports sent in by the physicians and surgeons attached to regiments and military hospitals in various parts of France. Some of the reports are in favor of a mild mercurial course, others in favor of simple treatment. They all agree in stating the cure by Mercury to be one-third longer than by the other treatment. At Strasburg, Mercury was only given to very obstinate cases. Between 1831 and 1834, 5271 patients had been thus treated, and the number of relapses and secondary affections calling for the employment of Mercury was very small. No case of caries, and only one or two instances of exostosis, had been observed. Full reliance may be placed on these facts, as regiments remain in garrison at Strasburg for five or six years.

"In the various reports now published, more than 80,000 cases have been submitted to experiment, by means of which it has been perfectly established that syphilis is cured in a shorter time, and with less probability of inducing secondary syphilis, by the simple than by the mercurial treatment."

Mercury partly fulfills one of the requisites of a remedy for syphilis—it breaks down devitalized tissue—when it increases secretion to such an extent as to cause its removal, it fulfills the first indication of cure. Acting in this way it may, as is claimed, assist in the cure of an indurated chancre, when common means fail. The second indication of cure it does not fulfill in any degree, but in many cases retards the nutritive process.

ARSENIC.

Arsenic is only employed in a later stage of the disease, when the symptoms are very stubborn, the general health much impaired, and the nutritive processes feeble. Though objectionable, it is less so than Mercury, as its influence is but temporary, and it does not produce those grave lesions that have rendered mercury such a fearful agent. It is claimed that when the assimilative processes are very feeble, and there is strong tendency to molecular death, it acts as a powerful tonic and restorative. However this may be, those who employ it only claim that it assists in the cure, aiding the action of vegetable alteratives, bitter tonics, and Iron. While objecting to its use, most decidedly, on grounds that need not be named here, there are cases that will be named hereafter, in which I should not hesitate to use it as a palliative, assisted by other means.

PREPARATIONS OF IODINE.

It is claimed that Iodine and some of its preparations are *anti-syphilitic*, or, in other words, act as antidotes to the poison. As heretofore stated, there are no specifics for the disease, and we must see how it fulfills the indications of cure before named. These remedies facilitate the metamorphosis of tissue, breaking down imperfectly vitalized material, and in a marked manner they stimulate secretion. We thus see that they accomplish the first object of cure. In some cases they stimulate digestion and nutrition, and then they would fulfill all the requirements of remedies for the disease. They fail in their action—first, by not stimulating the excretory organs in the proportion that they break down tissue, and hence we have to aid them by such of the vegetable alteratives as do promote secretion. Second, in many cases they impair the nutritive processes, and in these it is necessary to use the bitter tonics, Iron, and a highly nutritious diet.

Iodide of Potassium is the preparation in most common use. It is employed in doses of from gr. v to gr. xx four times a day. I prefer *Iodide of Ammonium*, as being less irritant to the digestive mucous membrane, and less prostrating, and as having a more certain action on the skin and kidneys. I usually order it in solution as follows: ℞. Iodide of Ammonium ʒij, Water f℥iij, Syrup of Lemon f℥j, mix, a teaspoonful every four hours, alternating with some vegetable alteratives and tonics. *Iodide of Lime* is claimed to be equivalent to the Iodide of Potassium in its action, but less irritant; the doses are the same. *Iodide of Iron* is employed in cases where the health is much impaired, and we desire a milder alterative action, qualified by the restorative influence of Iron. The Syrup of Iodide of Iron is employed in doses of a teaspoonful four times a day, usually associated with bitter tonics and vegetable alteratives.

Preparations of Potash and Soda.

These act in a similar manner to the iodides, breaking down worn out tissue and favoring its elimination. I have employed the Acetate of Potash, to a very considerable extent, in secondary syphilis, and like its action very much. I usually order ʒj, to a tumbler of cold water, three or four times a day. The Citrate, Carbonate, or Liquor Potassæ, may also be employed. The *Tartrate of Iron and Potassa* is an excellent remedy when the patient is feeble and the blood is impoverished—much better, I think, than the Iodide of Iron. It is soluble in four parts of water, and is given in doses of from grs. x to ʒss. I use but one salt of Soda—the *Sulphite*—and I consider it a very valuable remedy. It is especially applicable in these cases where there is profuse suppuration, a tendency to melting down of the tissues, and in ulcerative skin diseases.

Vegetable Alteratives.

All of this class of remedies that have proven useful in syphilis, stimulate the secretions in a greater or less degree. They favor metamorphosis of tissue, but do not exert the same influence in breaking it down as the agents heretofore considered. Many of them also improve the nutritive processes, and aid in renewing the structures of the body. It will thus be seen that they fulfill all the indications in the cure of syphilis, and were they sufficiently active we would need no other remedies. The fact is—and we may just as well recognize it—that their action is feeble in all their aspects, and must be assisted by other means. Thus we render their action on the excretory organs more decided, by remedies that act in this way; by the addition of the Salts of Iodine or Potash we give them greater power over the worn out tissues; and by the addition of tonics and stimulants we renew the tissues more rapidly.

They will cure syphilis without any aid, but many times their action is so slow as not to be available in practice, if used alone. Hence the importance of a judicious combination of other remedies with them. If we desire their greatest influence, I am satisfied that they must be employed in infusion, as their action is much more decided when employed with considerable quantities of water. This class of remedies is quite large, and we have not space to consider all of them. More is not necessary, for every practitioner has his Dispensatory or Materia Medica at his elbow. I will therefore name the more important.

I place Podophyllum and its preparations at the head of the class, as being more generally useful, and fulfilling the indications to a greater extent than most others. It may be employed in powder, in doses just sufficient to act on the bowels; or first give sufficient to produce its full action, and afterward in small doses. I would prefer it, however, in the following or similar form: ℞. Podophyllum, Hydrastin, Spearmint, aa ʒss, Boiling Water Ojss, let it digest for two hours, and give in wineglassful doses sufficiently often to act gently on the bowels. Other alteratives may be combined with it, and it is well to get it of such strength that the patient may take a pint in the twenty-four hours. Of course, it is not pleasant medication to thus use infusions, but it is very successful. Podophyllin is much employed in syphilis, the internal treatment recommended for indurated chancre being one of the most successful practiced in all forms of the disease. The following formula for its use will be found as good as any; ℞. Podophyllin gr. xx, Hydrastin gr. xxxx, Quinine gr. x, Extract of Conium ʒj. Make forty pills, the dose being one, two, or three times a day.

Corydalis, Stillingia, Alnus, Scrophularia, Rumex, Ampelopsis, Phytolacca and Kalmia, are among our best alteratives in this disease. In severe cases I employ them in infusion, one or more together, alternating them from week to week. The Compound Tincture of Corydalis (Scudder's Alterative) is a very good combination, as is the Compound Syrup of Stillingia, and the Alterative Syrup of the Dispensatory. We use them associated with the salts of Iodine and Potash, and with bitter tonics and restoratives.

Tonics and Restoratives.

These are very important means in the treatment of secondary syphilis, fulfilling the second indication of cure, the renewal of the structures of the body. It must not be supposed, however, that they are useful alone—there must first have been a breaking down of tissue—then its renewal, before these remedies are indicated; or they may be employed together. After a long course of vegetable alteratives and Iodide of Potassium, which seems to do but little good, the administration of Hydrastin, Quinine, Nux Vomica and Iron, will effect a rapid cure. Iron is of especial importance in depraved states of the system, or when the blood is dark colored in the veins, and should be used freely. Cod-liver Oil answers a good purpose in the worst of these cases.

Any of the latter tonics may be employed; in fact, we will find use for many of them, as the remedies are best alternated every week or so. With the improvement of the appetite and digestion, let the patient have a highly nutritious diet, taken in moderation; but proscribe all pastry and indigestable food.

Baths.—The employment of appropriate baths does much to assist the cure. The skin being one of the most important emunctories of the body, and the part through which the largest portion of the poison is removed, as is manifest by its frequent disease, we may readily see how much may be effected in this way. The object is to keep the skin continually active, but not to so stimulate it as to lead to exhaustion. We sometimes employ Soap and water, Saleratus-water, or Salt, using the bath daily, or less frequently. If the skin is dry and harsh, oleaginous frictions at night, with Soap and water, answer an excellent purpose. If relaxed and flabby, a decoction of Hydrastis, Cornus, or Oak Bark, with or without stimulants, is appropriate treatment.

In severe cases, especially where the skin is affected, vapor, hot-air and medicated baths prove serviceable. A vapor bath is very easily given. Take a bucket of hot water, or what is much better in these cases, a strong decoction of Tansy or Sweatweed, put it under a wooden bottomed chair, on which the patient is seated, draw a blanket around him, and put a hot iron or brick in the water to produce the amount of steam required. Alteratives may be employed in this way with good advantage in skin disease. The hot-air bath is the spirit-vapor bath heretofore described. A medicated vapor bath is often of service. A very convenient way to give them is to have a wire frame attached to a spirit lamp, to hold the tin or iron plate two or three inches above the flame. The patient being stripped and placed on a wooden bottomed chair, is surrounded with a blanket, fastened closely around the neck and dropping to the floor. Alcohol is burned under him until perspiration is started, when the plate containing the medicine is placed over the flame. Sulphur is an excellent stimulant to the skin when used in this way, and we obtain an excellent influence from Iodine.

The means I have named are associated in varying proportion, according to the condition of the patient and the effect desired. I have refrained from giving formula, as I do not wish to place any obstacle in the way of a rational practice in this disease, preferring to present plainly the indications of cure and the action of those remedies that we employ to effect it. I can vouch for the success of the plan named, as it is based upon an extended experience in my own practice and that of others, and feel satisfied that it will meet the expectations of our practitioners.

LESIONS OF SECONDARY SYPHILIS.

Most writers upon the subject have divided the symptoms of constitutional syphilis into two forms, *secondary* and *tertiary;* but I have never been able to see the importance of such classification. The syphilitic poison is single in its nature, and although, as time passes, it manifests itself in different tissues, and in different forms, it still requires the same general treatment. The general treatment already described is applicable to all of these lesions, and such modifications as will be necessary, and any local treatment, will be spoken of when describing each subject.

SYPHILITIC FEVER.

In some cases constitutional symptoms are first manifested by some febrile action. It may be but of a few hours' duration, or it may last for a week or more. Occasionally the skin has a yellowish, pasty, unhealthy appearance, the tongue coated, bowels constipated, and more or less depression of the nervous system. Usually it is remittent in its character, and having run its course, it gradually disappears.

The treatment is usually very simple. Give the patient the Podophyllin pill to get one or two actions on the bowels daily; Veratrum to control the pulse; Acetate of Potash ℨss to ℨj, three times a day in a tumbler of cold water, and the frequent use of a saleratus sponge bath, and the symptoms rapidly disappear. After this the general treatment recommended should be pursued.

AFFECTIONS OF THE SKIN.

Affections of the skin are of more frequent occurrence than any other lesions, and are among our best evidences of the disease. In many cases they are also an index to the success of our remedies, and when entirely removed and the skin natural and healthy, we have good reason to suppose our patient cured.

ERYTHEMA.

This is the earliest as well as the most frequent of the syphilitic eruptions. It makes its appearance as rose-colored spots, irregular in form, and like simple erythema or roseola, is effaced by pressure. They are sometimes so grouped together as to cover large surfaces, as the greater portion of the abdomen, breasts, or arms. It is not attended with fever, nor is there any unpleasant sensations, so that many times its discovery is accidental.

PAPULÆ.

Syphilitic *lichen* comes out as small pimples of a coppery-reddish color. They appear most frequently upon the back, shoulders and neck, though they may be found on any portion of the body. They are usually preceded by some derangement of the system, as loss of appetite, arrest of secretion, headache, etc. The eruption frequently does not continue more than two or three weeks, and passing off, leaves slight blotches, and desquamation of the cuticle. A broad papular eruption is sometimes seen, thus described by Vidal: "Sometimes we observe them of a firm consistence, very prominent, and of a decided copper color; at another point, we find little elevations already faded, less prominent, of softer consistence, and of a paler tint; on one side are yellowish spots, with a rosy tint, which are in process of being converted into papules; on the other, they are of a grayish shade, more depressed than the latter, and the marks left by the papules which have disappeared. They are separated by intervals, at which the skin is of a peculiar earthy color, giving to the whole a very characteristic aspect."

SQUAMÆ.

Of syphilitic squamæ we have three varieties—*lepra*, pityriasis, and psoriasis. It may be remarked that all syphilitic skin diseases are scaly to some extent, this being a characteristic symptom; but these possess the features of the diseases named, in fact are the same diseases modified by the syphilitic poison.

Lepra appears in the form of small coppery-red, shining spots, a little elevated above the skin. In a short time they lose their smooth appearance, and become covered with thin scales, which are constantly falling off and being renewed. They increase in size, maintaining a circular form, until they are two or three inches in diameter, and the skin becoming thick and hard, movements of the part are impeded and painful. In some cases ulceration occurs, the result being the formation of very unpleasant sores. The disease may be confined to the extremities and about the joints, but in some cases it extends to every part of the body.

Pityriasis is most usually confined to the scalp. It makes its appearance in the form of coppery-red discolorations, with but little change in the skin, but continued exfoliation of the epidermis. It may or may not be attended with the falling of the hair.

Psoriasis may appear in four forms. First, in the form of small coppery or dusky-red patches, irregularly rounded, and elevated above the adjacent skin. These soon become covered with thin scales, which are continually cast off. In other cases it occurs in the form of flat, angular, irregular, patches, which as the disease progresses, form continuous surfaces, covered with thick, dirty-white, and pretty adherent scaly incrustations. The margins of these spots have the characteristic dirty-yellow or coppery color, and when the incrustations are removed, the part presents a livid appearance. In the severer cases the skin becomes thick, hard, hypertophied, and fissured in various directions. On pinching up the skin it is found to be much altered in structure, rough, hard and uneven. The disease occasionally appears about the eyes, and gives rise to much irritation, and about the lips, which are dry and present fissures which are irritable.and painful. The most frequent form is psoriasis palmaris. It makes its appearance in the form of one or more red blotches or papules, exfoliation of the epidermis occurs, leaving a coppery-red and tender surface. At a later stage these become tender, crack, and when used, frequently bleed. Sooner or later the disease involves the tips of the fingers passing under the edges of the nails, and may cause their entire removal.

In the treatment of this form of the disease, I employ the vegetable alteratives in infusion, using them freely, and bathing the surface with the same. If the patient's health is not much broken down, give Iodide of Ammonium or Potassium, and after two or three weeks, put the patient upon the use of Tonics and Iron. These are the cases in which our old-school friends employ Arsenic, both internally and locally.

In addition to the means named, we will frequently derive much benefit from vapor baths, followed with fumigations of Sulphur, of Iodine. Sulphite of Soda ʒij, to Water ℥iij, Glycerin ℥j, is an excellent local application; or ℞. Glycerin ℥ij, Benzoic Acid ʒij, Oxide of Zinc ʒj, Water ℥ij, M. My favorite local application in this, as well as some other of these affections, is, ℞. Iodide of Ammonium ʒj, Water ℥iv, Glycerin ʒi). I have also employed the Glycerole of Tar with very good results.

VESICULÆ.

Syphilodermata rarely appears in the vesicular form, and when it is met with it is an early symptom. It most frequently takes the form of simple eczema, appearing upon the back, face and extremities. In many severe cases it answers the character of *eczema* impetignodes, the skin being swollen, the vesicles large, which when ruptured form a scab, which is cast off and renewed for several weeks, leaving coppery discolorations or cicatrices.

BULLAÆ.

Of this we have two varieties, *pemphigus* and *rupia*, the first being of rare occurrence, while the second is a quite frequent form of syphilitic skin disease. Pemphigus is most usually seen in congenital syphilis, and is evidence of grave impairment of vitality. It makes its appearance in the form of large blebs or blisters, ovoid in form, situate on a violet-colored base, and filled with a straw colored fluid. When they rupture, thin, brownish crusts form, which may be renewed for some time.

Rupia is one of the later symptoms of constitutional syphilis, and is almost invariably associated with poverty of the blood, and enfeebled vitality. It commences by the formation of large vesicles, upon a reddish base, sometimes filled with a yellowish serum, at others the fluid is bloody. By the third to the sixth day its contents desicate and form a scab, causing a superficial ulcer, which is violet in its color when the scab is removed. The constant secretion of purulent matter adds to the under surface of the scab, and it becomes more and more prominent, until it is half an inch or more in thickness. This scab is yellowish brown, or almost black, and the skin surrounding it presents a coppery-red areola.

The treatment for these forms will be similar to that directed for the squamæ, especial attention being paid to the digestive organs, and the administration of bitter tonics and Iron. The Compound Tincture of Corydalis proves a good remedy in this case, associated with Hydrastis and Iodide of Iron. An infusion of Corydalis or of equal parts of Corydalis, Alnus and Rumex is also an efficient treatment.

As a local applicatian, we will find equal parts of Tincture of Muriate of Iron and Glycerin to answer well in some cases. The Hydrated Oxide of Iron, with an equal part of Lard, is good, as is the Glycerin and Oxide of Zinc, previously mentioned. In quite severe cases I have obtained good results from an application of a strong decoction of Alnus, Rumex and Cornus. If single points of rupia are very persistent, I sometimes apply the Chloride of Zinc Paste to produce a slight slough, and then dress the sore with Mayer's or Mild Zinc Ointment.

PUSTULÆ.

Pustular eruption is a frequent form of syphilitic skin disease, when the poison has thoroughly impregnated the system. We recognize three varieties—ecthyma, impetigo, and acne, each of which possess many of the characteristics of the non-syphilitic affection.

Ecthyma is of most frequent occurrence. It makes its appearance as small, red, indurated spots, which soon suppurate, and a pustule is formed in the center. When severe, the skin is much inflamed, swollen, and of a dark color, and the pustule is blackish and infiltrated with blood. In the first form, when the pustule ruptures, a brownish scab is formed, which may be renewed for some time; the surface, when it is removed, has a coppery-red color, and when healed it leaves a slight cicatrix. In the second form, a thick, dark scab results, which is very adherent; progressing further, a process of ulceration is set up, which increases its size, and at last terminates in the formation of an open ulcer.

Impetigo appears as slightly raised, red patches, upon which soon appear numerous pustules, flat, and of variable size, manifesting a tendency to run together. The fluid is abundant and soon dries, forming thick, yellow incrustations, and when thrown off, the pit is coppery-red and tender. The eruption extending by new eruptions of pustules, may extend over a considerable portion of the body. The disease is occasionally very severe, especially about the mouth and nose, the pustules being large, and forming thick, yellowish-green or brown crusts. In a later stage of the disease, the pustules arrange themselves in circles, and the crusts are thick, yellowish brown, and cover considerable surfaces. The cicatrices left are of a dull white color, and permanent.

In syphilitic acne, the pustules are of small size, situate upon red indurations; remaining stationary for some time, they become covered with a thin scab, which when removed leaves a slight coppery redness. In other cases, the disease assumes the indurated form. It commences as livid, red, indurated tumors, which are painful when pressed upon. Suppuration proceeds slowly, and small scabs are formed upon the surface; in some cases the cellular tissue is involved, and the induration remains for some weeks.

The treatment in these cases will not differ materially from that recommended for rupia. Sulphite of Soda sometimes answers an excellent purpose, in doses of twenty grains four times a day, and a strong solution may be employed as a wash.

TUBERCULÆ.

"Syphilitic tubercles," says Langston Parker, "are deep-seated, solid, circumscribed elevations, containing neither lymph nor pus; they differ from the papulæ in their size, being much larger, more prominent, and better defined. Syphilitic tubercles are either isolated or grouped, of a shining red, livid or brown color, surrounded by an areola of a dark-red or coppery appearance. These tubercles are prone to become ulcerated, and form excavated sores with thick and elevated edges, and a foul surface, secreting an offensive pus, which drying up, is transformed into gray or dark colored scales or crusts. The syphilitic tubercle forms the connecting link between the secondary and tertiary symptoms of M. Ricord: it is the first of that class of syphilitic diseases in which the virus appears to have penetrated more deeply into the economy, and to have produced a disorganization in tissues, which those forms hitherto considered have left untouched.

"The flat tubercle of M. Cullerier, or the tuberculous pustules of Alibert, sometimes occurs as a primitive affection, but more commonly as a symptom of constitutional syphilis; in the former instance it is observed on the scrotum, the labia, the vicinity of the anus, or the mammæ. The surface of these tubercles is smooth and flat, of a deep red or copper color, varying from the size of a sixpence to that of a shilling; they are not so much disposed to ulcerate as the other varieties.

"The more common forms of tubercles are conical, or round elevations, dispersed here and there over the skin, or assembled in groups or clusters, which are also irregularly distributed. The size of these varies from that of a pea to that of a large hazel nut or filbert; they are more commonly situated on the anterior surface of the chest, or the abdomen, or the neck, or the internal part of the arms.

"Another variety of tubercle is situated more commonly on the alæ or lobule of the nose, or on the forehead; frequently, also, upon the neck of the uterus, or upon the tongue, when they may be mistaken for cancerous affections. These tubercles are commonly assembled in circular groups of variable size; they are so prone to ulcerate, that this termination appears to be one of their natural characters; when in this condition, they are frequently described under the name of syphilitic lupus. The tubercular syphilida are commonly complicated with a scrofulous, scorbutic, or herpetic tendency or diathesis; their progress is slow, and generally without pain; they gradually increase in size till they terminate in softening or ulceration. They are the most formidable of all the forms of constitutional syphilis, producing great deformity in all the parts invaded by ulceration, and exceedingly difficult to cure."

In the treatment of syphilitic pustules, I prefer to put the patient on the use of the Podophyllin pill heretofore named, and give the Iodide of Ammonium or Potassium in full doses in an infusion of Corydalis, Stillingia, or Scrofularia. We want but a gentle action on the bowels—one passage a day—showing the influence of the remedy. The vapor bath every other day, with sulphur, proves a valuable aid to the treatment.

If the tubercles become painful, and show a tendency to suppuration, we may employ emollient applications, or sedatives and narcotics. I like the action of the following: ℞. Ext of Conium ℥ss, Ext. of Aconite ʒij, Glycerin sufficient to form a paste. In some cases an application of equal parts of Tincture of Iodine and Tincture of Muriate of Iron will prove serviceable, or they may be covered with the Collodion or Gutta Percha mentioned under the head of Bubo. When they are indolent, we sometimes obtain good results from a continuous application of Mayer's Ointment.

ULCERS.

Ulceration may be the result of the vesiculæ, pustulæ, or tuberculæ, as already described, or it may even occur from the long continuance of the papulæ or squamæ. These ulcers possess all the characteristics of those arising from other causes—being *irritable*, *indolent*, corroding, etc. They also vary greatly in size, from that less in size than a three cent piece to one that covers a surface as large as the hand. When arising from the vesiculæ or pustulæ, there is usually a constant tendency to incrustation, no matter what their size; but when caused by suppuration of tubercles or gummy tumors they are usually open.

We will find them presenting every variety of form—round, oval, and irregular—at times superficial and without effusion into adjacent tissues. at others deep and surrounded by a wall of adventitious tissue. Whatever may be their shape or size, there is the coppery discoloration around them, or in the cicatrices of former ulcers, which gives their history.

The treatment will not differ from that already laid down, as the open ulcer is but a continuance of the prior disease. I believe it is the experience of all practitioners, that syphilitic ulceration heals as readily as the simple, when the constitutional affection is removed. They may be healed before this, by the use of the local applications that have been named, if the general health is good. If there is general debility and impoverishment of the blood, they will sometimes heal rapidly under the use of tonics, iron and nutritious diet.

Mayer's Ointment, made strictly according to the Dispensatory, is an excellent dressing, as is the Ointment of Elder, the Ointment of Baptisia, and the Ointment of Nitric Acid. The decoction of Alnus, Rumex, and Cornus—heretofore named—proves useful when the ulcers are indolent. If the secretion is profuse, we may use a decoction of equal parts of Baptisia and Cornus, or a Solution of Permanganate of Potash, one or two grains to the ounce of water, or of Carbolic Acid one part to forty parts of water; or, what is better, ℞. Carbolic Acid ʒss, Glycerin ʒiv. If the ulcers are sluggish and will not heal under these applications, we sometimes apply the Chloride of Zinc Paste to destroy the imperfect structure of their edges and base, when they heal as simple ulcers. The Ointment of Iron—made by precipitating the Solution of Persulphate with Ammonia, and combining with half a part of Lard—answers a good purpose in the same cases.

ALOPECIA.

Falling of the hair is an early symptom of constitutional syphilis, and will usually be found associated with the exanthemata, and with redness of the fauces. At its commencement it seems a minor affair, the hair coming out in small quantities, but as it progresses the hair has so frail a tenure that it comes out in quantities on slight traction. Thus if it progresses the patient will become nearly or quite bald, and in some cases will lose the eyebrows and eyelashes also, giving him a very singular and uncomfortable appearance. Usually there is but little apparent disease of the scalp; occasionally there is pityriasis, and again the pustules and scabs of impetigo.

Caused by the syphilitic infection of the system, the constitutional treatment is mainly to be depended upon, and when the person is brought under the influence of the proper remedies, the hair ceases to fall out. To gratify the patient, we usually prescribe local remedies, which to some extent check the falling of the hair. The following formula will be found as good as any: ℞. Tincture of Cantharides f℥j, Castor Oil f℥iv, Alcohol f℥xij, Oil of Bergamot, Oil of Lemon, Oil of Lavender, āā ʒij. Mix. Let it be applied with slight friction once or twice daily. Dupuyren's Pomade is frequently used ℞. Medullæ Ossium Bovis ℥j, Tinct. Cantharidis ℥j, add, Plumbi Acetatis ℥j, Bal. Peruviani ℥iij, Olei Carophylli, Olei Canellæ, āā gtt. xv. Mix.

MUCOUS TUBERCLE.

Mucous patches may be an early or late symptom of syphilis, occurring as early as the twentieth day, or not for two or three years. It is even claimed that they may be a primary symptom, taking the place of a chancre, and transmitting the primary disease by their secretion. I am satisfied that when appearing thus early, that they have their origin from an irritation of the surface produced by the syphilitic virus, or as we have seen, from the chancre itself, and in such cases the secretion is the specific virus.

They are also transmissable when really secondary symptoms, and not only will the growth spring up, but the constitution will be infected. They may be propagated from point to point of the same person by contact with the virus, and this is probably the means of their extensive distribution in some cases.

Mucous tubercles most usually make their appearance at points where the mucous membrane joins the skin, though they will be found on the mucous membrane proper, or upon the skin, as the scrotum, perineum, groin, axillæ, between the toes, the inside of the thighs, etc. They most frequently present themselves at the margin of the anus, or just behind the corona-glandis, and in the female upon the vulva; and from these parts they may extend so as to involve a considerable portion of the genital organs, and the perineal fissure. They may also be found at the lips, the inside of the cheeks, tonsils, the nose, etc.

They first appear as one or more red spots, slightly elevated above the surface. Their growth is usually rapid, so that in a short time they are one-fourth or one-half inch in height. When grouped together they resemble a bunch of red raspberries. Their color is a bright vivid red, and they bleed freely when their covering is ruptured. The secretion is usually thin and muco-purulent, but if from friction or other cause ulceration occurs, it is purulent and abundant. At times the secretion from them becomes so ichorous as to excoriate adjacent parts When situated on the skin, their color is brownish-red, and when upon the mucous membrane of the mouth, a blanched white, like the eschar of nitrate of silver.

As in other forms of constitutional syphilis, we expect to remove this symptom, by eradicating the general disease upon which it depends. And although local treatment will effect their removal in some cases, without internal remedies, it should always be held subservient to the latter.

Various local means have been employed in this case, sometimes with and at others without success. I have seen the strongest escharotic used for their removal, and the reappearance of the mucous tubercles before the part had healed. So I have seen the hot iron applied to the entire perineal fissure until the patient could not be seen for the smoke produced by the burning, and in two weeks they were as abundant and prominent as ever. If this teaches us anything, it should cause us to rely upon constitutional measures.

I have obtained good results from cauterization with Chromic Acid, as named under the head of gonorrhœal vegetations, but I would only employ it when the patches were small. A strong solution of Permanganate of Potash has also answered a good purpose. And I am informed that Carbolic Acid has been successfully used. Dusting the patches with equal parts of Sub-Nitrate of Bismuth and Oxide of Zinc, being careful to separate the folds and apply the powder between, is a very good plan. In other cases we may use a saturated solution of Tannin, freely applied. The extract of red clover has also been recommended.

Gummy Tumors.

Gummy tumors is a late symptom of syphilis, not usually appearing for two or three years or more. They are generally found in the cellular tissue under the skin, but the same development may take place in the muscles, or even in tendinous structures. They make their appearance as hardened masses, freely movable under the skin, from the size of a cherry to a hen's egg. They frequently remain without change for months, giving the patient but little uneasiness, further than the sensation of an adventitious body. At last they become tender on pressure, form adhesions to the skin, which become dark-red, or livid and coppery, and at last thinned and ulcerated, discharging an ichorous pus. Suppuration usually commences at their center, and as it progresses a large foul ulcer is formed. No tendency to healing is manifest until all the formation has been removed, with subsequent adventitious deposit, and at last when healed a permanent cicatrix of a dull white color remains.

The treatment will not vary from that heretofore described, but it needs to be very thorough, as the presence of these tumors is evidence of grave syphilitic cachexia.

Affections of the Mouth and Throat.

Erythema of the throat is an early symptom, as we have already noticed. It may pass away soon, or re-appear several times, before the parts become permanently diseased. The disease makes its appearance in the mouth, in the form of small ulcers, usually situate on the edges of the tongue, inside of the lips, or upon the cheeks. The parts adjacent to the inflammation are reddened and tender, while the ulcer is more or less painful. It will vary in size from a grain of wheat to the size of a dime, rounded, oval, or irregular in form, with sharply cut edges, and its base covered with a coppery yellow or gray material. Sometimes they remain stationary, but at others they manifest a tendency to spread and involve adjacent parts. We will occasionally find them remaining unchanged in size and appearance for months. When healed a cicatrix is left, and the part retains a peculiar hardness for some time.

Ulceration of the throat commences in a similar manner, in many cases, the ulcer being the cause of the soreness. At others, the throat becomes inflamed, giving rise to uneasiness and pain in deglutition. On examination it is found of a dusky red, the mucous membrane thickened, and the follicles enlarged. The ulcers are usually of a circular form, the edges well defined, and covered with a dirty yellow or white, pultaceous material. As in the mouth, they manifest a tendency to enlarge, but at other times attaining the size of a three or five cent piece they remain stationary.

In addition to the general treatment heretofore described, we may use the following local means: Frequently the ulcers of the mouth are benefited, or heal rapidly by free cauterization with Nitrate of Silver, a mouth wash of a strong decoction of Hydrastis or Baptisia being employed, Hydrastin one part, to Chlorate of Potash five parts, is sometimes a very good application, as is a solution of Permanganate of Potash, one or two grains to the ounce of water.

For the disease of the throat we employ a gargle of a decoction of Baptisia with Chlorate of Potash, or instead a lotion of Iodiode of Ammonium in Glycerin and water. The solution of Permanganate of Potash will be found an excellent remedy, using it three or four times a day. The ulcers may be touched occasionally with Muriated Tincture of Iron, or with Nitrate of Silver, which assists in removing them. I have found much advantage from the use of inhalations, using the apparatus, and formula described in the next section.

Affections of the Nasal Cavities.

Disease of the nose is usually a late symptom, though we may observe erythema with catarrhal symptoms, associated with the disease of the throat. It commences with the symptoms of catarrh, and continuing for a time, we will find the mucous membrane swollen, dusky red, and at last presenting points of ulceration. At first there is diminished secretion, but after a time, masses of inspissated mucus, with blood and pus, are, from time to time, discharged. Progressing still further, this secretion becomes more abundant, the patient complains of a fullness, sense of tension, and aching in the nose, which is frequently somewhat swollen at the lower margin of the nasal bones. The ulceration progressing further, the bones become affected, and there is frequent discharges of fetid muco-pus, scabs, inspissated mucus, and the debris of bone.

Points of ulceration may be visible to the eye, when they present the same appearances as those described in the throat. But the middle and posterior parts of the nose seem to be the favorite locality, and it there commits it greatest ravages. The turbinated bones are frequently affected, and are first cast off. The bones becoming involved, the support of the outer nose is destroyed, and we have that peculiar sinking of it so characteristic of syphilis, or it may continue to the destruction of the cartilaginous septum, the nose becoming flat. Passing upward it destroys the superior turbinated with the lateral masses of the ethmoid, and backward it erodes the soft palate, and at last destroys more or less of the palatine arch. We thus find in some cases that the mouth and nose is but one cavity, all the superior structures as far as the orbits, and base of the cranium having been removed by the ulcerative process.

In the earlier stages, the disease yields readily to treatment, but when the bones become involved much care is required to arrest it. Select internal remedies, so as to remove the constitutional affection without producing debility or impoverishing the blood. Iodide of Ammonium with the vegetable alteratives, and the employment of bitter tonics and Iron, to improve digestion and assimilation, will be the best treatment. The prolonged use of Iodide of Potassium frequently does much harm.

Local means are of much importance. They are used to best advantage in the fluid form, either with syringe or the new method of hydrostatic pressure. In either case they should be used in considerable quantity, to clear the cavities of accumulated secretions, and to thoroughly reach affected parts. It has been shown that if the patient breathes through the mouth exclusively during their use, the soft palate closes the posterior nares, so that a fluid thrown into one nostril will pass out at the other. If a syringe is used, it should contain four to six ounces, work easily, and have a large nozzle; having filled it, let the fluid be forced slowly into the nose until it is thoroughly washed out. In the other method, a jar or funnel, resembling a bottle with its bottom removed, is placed on a retort stand. To the small lower extremity a piece of rubber tubing, three or four feet long, is attached. Now filling the jar, which is higher than the patient's head, the tube is inserted into one nostril and the fluid flows through and out at the other. Any amount of fluid may be thus used.

To wash the nose out, we may use a solution of common Salt ʒss to Water Oj; or of Permanganate of Potash ʒj to Water Oj. A very good lotion for relieving irritation is composed of: ℞. Chlorate of Potash ʒij, Glycerine f℥iv, Water f℥xij. We may sometimes substitute, with advantage, a decoction of equal parts of Alnus, Rumex and Cornus, with or without a portion of Glycerin. A solution of the Permanganate of Potash, alternated with the infusion just named, are the remedies I have obtained the best results from.

I have used the inhaling apparatus, or atomizer, of Dr. Seigle, in these cases, as well as in syphilitic sore throat, and laryngitis, with marked advantage. The instrument consists of a copper boiler, resting on a tin frame work, which also incloses the spirit lamp by which the boiler is heated; passing from the top of the boiler is a glass tube, bent at a right angle and terminating in a small opening, and at right angles to this a similar one, which passes into a small cup holding the medicated fluid. The instrument works well, is automatic, and not liable to get out of order.

In using it, fill the boiler half full of water, light the alcohol lamp, and in three minutes a jet of steam will pass out of the glass tube. Place the fluid to be inhaled in the small glass cup, and as the jet of steam passes over the small tube leading from the cup, a vacuum is formed in it, and the medicated fluid rises and is carried off in the current. With the vaporization of one drachm of water in the boiler, two drachms of the medicated fluid will be atomized and carried off.

Any remedy in solution may thus be carried to the part affected. I use decoctions of Chamomile, Hydrastis, Baptisia, etc., and solutions of Chlorate of Potash, Permanganate of Potash, Sulphite of Soda, Chlorinated Soda, and Nitrate of Silver.

Muscular Pains.

Muscular pains frequently accompany the earlier symptoms, though they may attend all stages of the disease. These pains are sometimes attended with a sense of stiffness and soreness, as if caused by over exertion, but at others they are more of the nature of cramp, and are relieved by pressure. The addition of Conium to the remedies employed is usually required to remove them. If they are located in the fibrous structures near the joints, Macrotys will also prove useful.

Iritis.

Inflammation of the iris is one of the most serious lesions of syphilis, involving as it does so important an organ, and if not arrested, causing the destruction of the eye. It most generally makes its appearance from six to fourteen months after the primary disease, being associated with papulæ, alopecia, and sore throat. It does not differ materially in its symptoms from non-syphilitic iritis, and can only be diagnosed from it by its association with other lesions.

Dimness of sight and fatigue in using the eye is usually the first symptom, and may continue for several days before the disease is developed. Soon the globe becomes sore when pressed upon or when moved, and injection of the circum-corneal vessels is noticed, The pain soon becomes severe, with a feeling of extreme distension of the eyeball, and dull pain extending to the orbit and forehead. There is much intolerance of light, with increased secretion of tears, when the eye is exposed, and dimness of vision and haziness become prominent at this time. If we examine the eye, we will notice a redness situate beneath the conjunctiva, which is formed by vessels passing in radii toward the cornea. The pupil is contracted and looks dull, and the motion of the iris is impaired. Its color is also changed, becoming yellowish-green if the person had blue eyes, and dusky red if they were dark. Some writers base a distinction between common and syphilitic iritis, by the scattered and furuncular appearance of the redness for some time, and upon the rusty color of the iris near its pupillary margin which is observed in the last.

If the disease is allowed to progress, the iris bulges forward toward the cornea, the pupil is irregular in form, and at last becomes obliterated, and the exterior half of the eye and cornea become more convex; myopia, hardness of the eye and amaurosis follow more or less promptly.

Though a severe affection, the treatment is comparatively simple, and very successful. Open the patient's bowels and keep them regular with the Podophyllin pill heretofore named, and give a solution of Iodide of Ammonium in ordinary doses. Keep the stomach and digestive organs in good condition by the use of tonics and small portions of Quinine. At first use the spirit vapor bath, with cold sponging daily, afterward a simple bath will be sufficient.

The most important part of the treatment is to keep the pupil dilated with Belladonna. If this is done, impairment of the structures of the eye need not be feared. I prefer a solution of Atropia, from one to five grains, to the ounce of distilled water, and dropped into the eye every four to six hours. The same object may be accomplished by the use of the Extract of Belladonna around the eye and to the lids, or by a collyrium of ℞. Essl. Tincture of Belladonna ʒj, Water ℥j. No other local means should be employed, as it would interfere with the above and lead to bad results. Keep the patient quiet, in a darkened but well ventilated room, until the pain and intolerance of light has entirely disappeared.

SYPHILITIC DISEASE OF THE BONES.

Disease of the bones is among the latest symptoms of constitutional syphilis, and is included in the *tertiary* form of the disease, when this division is made. It is very difficult at this day to determine what part in the causation of these affections the virus of syphilis plays, as it is well known and now admitted by most writers, that Mercury will give rise to all the phases of them noticed. It is my belief that they are wholly due to mercurialization, and that syphilis has nothing to do with them. We will notice some authorities upon this subject.

Mr. Parker writes, "We may naturally inquire whether Mercury has anything to do with the production or nodes. I confess that I am disposed to think that a great deal of mischief is due to a mercurial cure." "It is a fact," says Mr. Carmichæl, "that in those cases of syphilis treated without Mercury, the secondary symptoms are particularly mild. and the bones are seldom or never affected." Dr. Charles A. Lee, in a note to Copland's Dictionary of Medicine, remarks, "The symptoms following mercurial treatment are more severe and difficult to remove than those following primary sores not treated with Mercury;

and when relapses do occur in the secondary stage, they are far more readily removed in those cases where no Mercury has been given. Mercury, when given incautiously, or in too large quantities, especially in syphilitic diseases, tends to undermine the constitution, to predispose to and aggravate constitutional affections, to increase general irritability, to induce inflammation and ulceration in, and destroy the mucous textures, to promote morbid absorption and removal of the fatty, fibrinous and osseous substance of the system, and to induce synovial, albuminous, and serous accumulations. The extent and injury to the soft and bony parts of the system produced by Mercury, are more to be dreaded than any primary or secondary effects of veneral poisons."

NODES.

Nodes are hardened elevations upon the bones, caused by exudation between the periosteum and bone, the result of a low grade of inflammation. In other cases the material thrown out resembles the provisional cartilage in fracture, and occasionally deposits of bony material takes place within it, giving it almost an ivory hardness, In some cases this growth progresses to considerable size without any unpleasant symptoms, but in others there is more or less pain, usually deep-seated, tensive and aching.

NOCTURNAL PAINS

Are almost always associated with nodes, and are sometimes so severe that they prevent sleep and cause much nervous exhaustion. These pains may also occur without apparent disease of the bones, in each case being deep-seated and aching, or as if there was a foreign body in the part that should be removed.

Nodes terminate in a variety of ways. Resolution frequently results under appropriate internal treatment, the enlargement gradually passing away, though almost always leaving a roughness or unevenness that remains for life. In other cases, inflammation of the bone occurs, followed by suppuration and caries.

SYPHILITIC PERIOSTITIS

Presents the symptoms heretofore named. It is attended with much general disturbance, and severe local suffering. Not unfrequently the inflammation terminates in suppuration, which continuing, we at last find caries of the bone.

SYPHILITIC OTEITIS

Is not of so frequent occurrence, except as excited in the above way. It does not differ in any respect from the disease as heretofore described, and will need but mention here.

In addition to the general means for the constitutional disease, which should be employed with much perseverance, the local means heretofore named, under the head of diseases of the bones, will prove applicable.

INFANTILE SYPHILIS.

Secondary syphilis may be transmitted from either parent to the child, which will be born impregnated with the poison. The disease either shows itself at birth or a few months after, though in rare cases several years may elapse. The most common affections of the child is the squamæ, and pustular skin diseases, though occasionally the mucous membranes are affected. There is almost always contraction of the jaws, and deformity of the teeth, and this is looked upon as evidence of syphilitic parentage, even when no other symptoms present. The following are the propositions laid down by M. Ricord regarding the transmission of syphilis:

"1. The father and mother may transmit the disease to their child indifferently, if either or both of them be affected.

"2. Transmission may occur from the parents to the child, when they are affected with constitutional symptoms, or when a concealed syphilitic diathesis exists in them.

"3. The absence or existence of constitutional symptoms in parents at the moment of impregnation and conception exerts no influence on the form of the disease, which may afterward appear in the child. The distinction established by M. Cazenave between congenital and hereditary syphilis, and which is based on the absence of constitutional symptoms in the parents at the moment of generation, or which have been developed in the mother during gestation, is totally erroneous; and indeed M. Cazenave confesses that his opportunities of observing have not been ample.

"4. The character and period of the manifestation of the symptoms in the child are governed by the stage to which the disease had advanced in the parents at the moment of generation. The treatment to which the parents were subjected may also retard, prevent, or modify its appearance in the child.

"5. If the parents are both healthy at the time of generation, and the mother contracts syphilis during gestation, she may transmit the disease to her child. Of this I have seen several examples at various periods of pregnancy, even to the seventh month inclusive.

"6. When the venereal poison is transmitted from the mother to the child during pregnancy, infection takes place through the medium of the placenta, and in this case, appears to occur after the fourth month of utero-gestation.

"If the father alone be diseased at the moment of generation, an abortion may occur at any period of pregnancy. If the mother alone be diseased at the time of conception, the abortion will not take place until after the fourth month.

"7. Children born of a father or mother affected with syphilis may escape infection; for a certain disposition to receive constitutional disease is necessary for the child as well as the adult, and this may be absent.

"8. Observations made as accurately as possible seem to prove that constitutional syphilis may be transmitted from the child to the mother during utero-gestation."

Syphilization.

The minds of syphilographers are now agitated with the question, can the constitutional disposition to syphilis be so entirely removed that the person will be no more affected by it than he would be by small-pox, if he had previously had the disease? This question is not only answered in the affirmative, but Prof. Boeck, of Christiana, Sweden, claims that continued inoculation will also remove the constitutional disease when all other means fail. Other surgeons have tested his views with favorable results. As it is a new subject, it will be better to let Prof. Boeck speak for himself, and I will quote from a lecture delivered before the physicians of Dublin:

"By syphilization I understand the mode of treatment by which, by repeated inoculations of syphilitic matter, taken from primary sores, I bring the body into the condition that it is no longer susceptible of the action of the syphilitic virus.

"It will, perhaps, be agreeable to you, gentlemen, before I proceed further, that I should lay before you a short *resume* of the history of this mode of treatment. Auzias-Turenne, of Paris, performed inoculations of syphilitic matter upon animals in order to see whether this virus could be transferred to them, which up to that time had been denied. In this he was at length successful, and it was chiefly apes which could with the greatest facility be inoculated. After chancres had been repeatedly produced in the same ape, a great many skeptical physicians wished to see his inoculation, and a meeting was appointed in the *Jardin des Plantes;* the old ape was inoculated, and a still greater crowd assembled a few days later to see the result. But when the ape was brought in nothing was to be seen. It may easily be imagined how the result was received, and that Auzias-Turenne was ridiculed, but he did not on that account give up the method; he continued his inoculations, found that the old ape was not susceptible of fresh inoculations, but that a second ape after inoculation got chancres, though this ape also, after a series of inoculations, became unsusceptible.

"Auzias-Turenne now saw clearly that he had here a natural law, in itself resembling that which your immortal Jenner had discovered in the inoculation of vaccine matter, and we shall not upbraid him now that his French blood carried him away, and that his first idea was to employ the inoculation of syphilitic matter like that of vaccine matter—as a prophylactic. We can not gainsay him that his train of ideas is logically correct, but it is not practically correct, for the great rule is, that he only gets syphilis who himself will have it.

"As the result of this idea of employing syphilization as a prophylactic, my friend Auzias wished at the time to syphilize all public girls, seamen, and soldiers, and he would willingly have syphilized us all. No wonder, then, that such an idea met with all the opposition it deserved; but it was not long until Auzias renounced his error, and at the same time there appeared an Italian, Sperino, of Turin, who showed, by a series of experiments, that the syphilitic disease was cured during these inoculations, which Auzias, too, at the same time demonstrated. Still, this failed to reconcile physicians to the new method; such a prejudice had been raised against it, that both the Academie de Medicine of Paris and the Academy of Turin condemned it without having the necessary materials before them for passing any judgment; the paradox involved in this method appeared to all so enormous as to render proofs of its absurdity unnecessary.

"Lecturing in the University of Christiania upon syphilis, and having a section of the hospital devoted to this disease, I carefully investigated all that was advanced upon this subject, and ascertained that there must be some truth in it. I had, through a period of very many years, found that our treatment with Mercury is highly unsatisfactory; I therefore considered that, from my position, it was my duty to give a trial to this new method, although it appeared to me as paradoxical as it did to all the world, and notwithstanding that it had been condemned by two academies. But before I began, I laid down for myself certain limits, to which I still adhere. It will be at once observed that I will not speak of the method as a prophylactic: this would be immoral; but neither am I at liberty to employ it in every case of syphilis: it is only when syphilis has become constitutional—when the syphilitic virus flows with every drop of blood through the system—that I allow myself also to inoculate it upon the skin.

"The next question is, whether I shall employ syphilization in every case of constitutional syphilis?

"By a fortunate coincidence it happened that of the two individuals whom I first took under treatment by syphilization, the one had not been treated for syphilis, while the other had been the subject of all the resources of our art. In the first the inoculations proceeded without difficulty, the symptoms gradually disappeared—in a word, I found myself upon the beaten path. In the other case all was irregular, I could effect no order at all, and when my first patient was well, the phenomena in the second were still in full bloom. I immediately began to suspect that it was to the medicines previously given that this result was attributable, and on subsequently investigating this opinion, its truth has been most completely confirmed, so that I have made it a general rule to syphilize only those who have not previously been treated with Mercury, whether this has been employed for primary or constitutional symptoms. But if I be asked whether syphilization has not some effect in these cases, I can answer decidedly in the affirmative—it often acts incredibly. Dr. Simpson, of Edinburgh, has recently described two such cases, which were sent over to me by Prof. Simpson; what is there stated corresponds precisely to what I have myself noted, and of which any one may satisfy himself. But the reason why I do not undertake the treatment of such individuals is to avoid having relapses, which in these cases are apt to occur.

"Now, in order to make my usual mode of proceeding as plain as possible, I shall suppose that a person laboring under primary syphilis consults me. In this case I treat the primary sore as a simple ulcer—I prescribe a weak solution of Sulphate of Zinc or such like, and occasionally employ a slight cauterization of Nitrate of Silver; I give no internal medicine, but make the patient come to me once or twice a week, that I may observe when the constitutional symptoms break out, for the earlier syphilization can be commenced the better. So soon as I perceive the first constitutional signs, I commence the treatment by taking matter from an indurated chancre or from an artificial pustule in a patient under treatment by syphilization. I inoculate first on both sides of the chest, and make three punctures with a lancet, precisely in the mode adopted in vaccinating. After three days pustules are developed, and then I inoculate again in the sides, taking the matter from the pustules produced by the first inoculation, observing carefully to make the second inoculation at a distance from the first, so that the sores may not become confluent. At the end of three days I make the third inoculation, taking the matter from the pustules of the second inoculation; and I now continue to inoculate on both sides every third day, always taking the matter for the fresh inoculation from the pustules last formed, so long as this matter continues to afford a positive result. When it no longer takes, I procure new matter in the same mode as for the first inoculation, and continue with this as with the first. This second matter will yield smaller sores and a shorter series than the first, and when it no longer takes I procure a third and proceed in the same manner. This third matter will produce very little effect, and I therefore pass to the upper arm, where I proceed in precisely the same mode as in the sides; and when no effect is any longer visible in the upper arm I remove to the thighs, and continue there in the same way as in the two preceding places. By the time the inoculations are here brought to an end, from three to three and a-half or four months have probably elapsed, the symptoms which manifested themselves from the commencement have disappeared, or if some slight symptom has remained this disappears spontaneously. It often happens that during the treatment a fresh outbreak takes place, and he who is not acquainted with the method believes that some other plan must now be adopted; another infers that syphilization is of no avail. But, let them not be deterred by any symptom, not even by the most severe iritis, which never requires anything but the instillation of a little atropia. But, happen what may, let them shut their eyes to it and continue the inoculations. The patient who, during the whole treatment can attend to his business, feels, after it is completed, perfectly well, and may immediately expose himself to any hardships. He can endure wet, cold—in a word, everything which after mercurial treatment would render him liable to life-long illness. It is probable that I may now be asked as to the result at a later period for these individuals, and I shall speak first of the relapses. On the whole, I have treated 429 individuals, and of these 45 have come back, making about 10½ per cent.; but, as we may calculate that some of those treated during the last year will return, I will assume that the relapses will amount to 12 or 13 per cent. But, let us now examine more closely what is called a relapse after syphilization. In many instances a single mucous tubercle, a small white spot on the tongue or in the throat—symptoms for which nothing more than external means is employed, and for which the patients are treated only for a few days in hospital. So far as I at this moment remember, thirteen were taken again under treatment with syphilization, and two with Iodide of Potassium.

"You will next ask whether tertiary symptoms have been developed in any of them. This has been the case, I believe, with three; but at the same time these individuals have been perfectly well—their general health has not, as so often happens after mercurial treatment, been broken down, and in those who have had relapses it has been good, as it is evident that in those who have had no relapse it has been particularly good.

"We come now to the children of those who have been syphilized. Here we are not much better off than after the mercurial treatment; we see the same rule to prevail as after this last method, namely—that when the mother has been syphilitic, the first child or children is or are syphilitic; that they are healthy is the exception. If the father has been syphilitic, the children are, in general, healthy; that they are syphilitic is the exception.

"You will next propose to me the question how I treat syphilitic children. I treat them precisely as I do adults; and it is interesting to see that the sores in these little ones bear in size a proportion to that of the child, and that the patients suffer less, and not more, than adults. The results of syphilization in children with hereditary syphilis have not been brilliant; of forty-two children, twenty-two died, but I have taken under treatment every case that I have met with, and every one knows that in such children there are very often affections of the internal organs which lie beyond our power to cure. I can not at this moment say how many little children with acquired syphilis I have syphilized, but they are not few, and of these only one died, the cause of death in that instance being croup after I had performed tracheotomy. Of adults, two died—an old woman of dysentery, and a young woman of puerperal fever. This latter case I forgot to include in the *resume* I have given in the *British Medical Journal*.

"Now, in order to give you a definite idea of the confidence I have in this method after having practiced it daily for thirteen years, I shall say only that if I myself, or any of mine, were so unfortunate as to get syphilis, I should employ no other means than syphilization.

"Still, a few words in conclusion, gentlemen. Vaccination has for many years stood alone; syphilization now comes to join it. Shall we stop here? I believe not. Vaccine and the syphilitic matter are both animal viruses; we see them contained under a similar law. May not also the other animal poisons be referred to a similar law? We see that nature is simple in her diversity: should this not also here be the case? Should not glanders, hydrophobia, etc., some time be curable? Let us all seek to clear up this dark point in our science, and let us not, as hitherto, with respect to syphilization, seek only to extinguish the rising gleam."

LECTURE XL.

CURVED SPINE, RACHITIS AND HYDRO-RACHITIS.

VARIETIES OF CURVATURE—Ætiology—mechanical views and contrivances—medicinal treatment, the primary and most important—counter-irritation—cases—RICKETS—nature and results—Prognosis and treatment—earlier and later—SPINA BIFIDA—importance of early diagnosis—measures recommended.

CURVED SPINE.

THE SPINE is subject to a variety of curvatures: LATERAL, bending only at one point from a right line, or at several, as at the two extremities and in the middle, giving the shape of an italic *s* or *f*. Or there may be an ANTERIOR curvature of the extremities of the column, the middle projecting *backward* as a "hump" on the back—or it may be the reverse of this, the spine approaching the *sternum*, and that bone also *projecting* to make room for the viscera, or remaining stationary and compressing the Lungs and Heart—in the latter case soon causing the death of the patient. In some cases there is a regular *anterior* curve, the head and hips being drawn back so that the trunk forms a *segment* of a *circle*.

These curvatures may be CAUSED by *caries* and destruction of the substance of the vertebræ, or inter-vertebral cartilage, or from debility, or paralysis of some of the muscles and ligaments of the spine In nearly all cases there will, for a time, be more or less irritation and chronic inflammation of the parts affected. *Lateral* curvatures are generally unconnected with any disease of the vertebræ, or at least any ulceration or destruction of either the bone or cartilage. They depend upon debility or paralysis of the muscles of one side.

In most cases, although at the commencement of the disease the patient may have appeared otherwise healthy, much curvature will not long exist before the health will be evidently impaired. I am inclined to think that disease of the general system or some local irritation is, in all cases, the *proximate cause;* and that what is usually looked upon as such, is only the remote or *predisposing* cause. These remote, or as they are generally considered, exclusive causes, are such as sitting or standing habitually and laboring in such a position as to keep the muscles of one side upon the stretch while those of the other are relaxed as in studying at school, sitting with the right side leaning toward a desk—working at some trade or art requiring a posture constantly bent tó one side—general debility of the system while the patient is obliged to stand upon the feet or sit in an erect posture too long at a time, thus wearying the muscles and inducing curvature by mere relaxation. All these are doubtless remote and predisposing causes. But all who are subjected to these improper influences are not affected with curved spine, though *the* causes operate upon them with equal force. Some are afflicted with disease in the parts affected, and hence are not able to resist these influences which *then* give the special direction to the effect of the local irritation. Those who are free from such irritation and disease can bear up under the effects of these postures and habits.

This *partial view* of the ætiology of the disease, has led to what I conceive to be a great *error* in the treatment. The well known ill-success that attends the treatment of these cases in the hands of old school surgeons, demonstrates very clearly that an error exists somewhere. This disease (when not caused by rickets or caries of the vertebræ, of which we will hereafter speak), is spoken of and treated as a mere "deformity," the idea of *disease* being by nearly every one left entirely out of the account. This is the rock on which so many have split. The *deformity* is attempted to be remedied by merely *mechanical means*. Obvious among these is the "*Recumbent posture*," to which few will submit, and fewer *could*, if they would; and which always, if persisted in, proves vastly injurious, if not fatal to the general health, and rarely if ever benefits the local deformity. "*Mechanical support*" by means of stays, etc., only serves in most cases to *weaken* the muscles of the contracted side, while it does not strengthen the others. "*Extension* of the spine" by fixing the pelvis or feet to one point and the shoulders to another, and then straightening the spine by main force—and "*Division of the Spinal Muscles*," are operations which no surgeon who had any reputation, or expected any except that of infamy, would ever attempt in *private practice*. Such experiments may do for Hospital practice, where "heretics" are excluded and "no one left to tell the tale." This "muscle cutting gone mad," as the latter experiment is styled by Professor Flint, is about as rational as the exploit of a celebrated surgical professor in this city—cutting the masseter muscle for acute lock-jaw!! Hospitals, though good in their way, cover many surgical sins that would never be committed elsewhere.

All the means above named are recommended in the books, and most of them, with many other similar ones, have been tried by surgeons, but with total failure in a vast majority of cases. The numerous deformed individuals seen in our streets every day sufficiently demonstrate the truth of the remark—to say nothing of the frequent fatal termination of the disease in early life.

As a large majority of these cases occur in females, and come on between the ages of twelve and eighteen, they are very generally connected with a derangement, more or less severe, of the menstrual functions.

The first thing that generally attracts the attention and leads to the discovery of the real nature of the case, is a slight *elevation* of one of the *shoulders*. The patient and parents erroneously suppose that the shoulder is enlarged. The deformity of the spine may have been going on for a long time before the discovery was made. Before being first examined it may have assumed two or three turns.

In speaking of the TREATMENT I should recommend for cases unconnected with disease of the bones, I would remark, that in the *early* stage of the disease, before any great curvature has taken place, and while there is but little local irritation, change of exercise and habits, with open air, discontinuance of all improper dress and employments, may do much to restore health and remove the deformity. But *after* the disease is well established, and the curvature becomes so permanent as to give the patient pain in the attempt to straighten the spine by force, such means will little more than *palliate* for a short time some of the more distressing symptoms directly dependent on former habits. All cumberous *machinery* for supporting or restoring the spine will not only be useless, but highly injurious. The patient's health in *all respects* must be restored, and the local irritation and *disease* of the spine removed, before any attempt to rectify the deformity by mechanical means. It will be found in nearly all cases that the *skin* is in a dry and unhealthy condition; and though the patient seems in tolerable health, and does not complain much, if any, yet if we make strict inquiry into the case, we will find that some of the vital *functions* are very much deranged, and all are performed in an imperfect and enfeebled manner. It is sometimes very difficult to get at the truth in regard to the *uterine* functions of young females. Some surgeons do not attempt the inquiry, contenting themselves with a more superficial view of the case, while others who undertake the investigation go at it in so bungling, so embarrassed, and consequently *embarrassing* a manner, as to deter the patient from answering properly their inquiries or submitting to the proper examination.

Having ascertained the *condition* of your patient's *health* in all respects, go to work with such means as are best calculated to restore the impaired functions to their normal condition. If there be any *uterine* derangement, first attend strictly to *that.* Restore the skin by the alkaline baths and frictions, and use cold bathing often, if she can bear it. Let her be as free as possible from care and mental anxiety, and have exercise in the open air. Remove all causes of disease as far as possible, and give alterative tonics to restore the tone of the system generally. Keep the bowels regular.

It is best in nearly all cases to begin your treatment with an emetic. A suitable one in this case, is an infusion of equal parts of Chamomile flowers, Eupatorium perfoliatum and Lobelia herb. This is both emetic and tonic. It should be given in small doses at long intervals, so as to be slow in producing its effects. The patient should be kept under the influence of this for six or eight hours, vomiting every two or three hours during the time. This should be followed next day with an active *cathartic* of an unirritating kind—such as Podophyllin and Cream of Tartar, or the compound powder of Senna and Cream of Tartar.

The *Alterative Syrup* should be taken constantly. In cases of females much benefit will be derived from the use of Macrotys or the macrotyn, in connection with the other treatment—especially if there be much uterine derangement. If chorea be connected with the curvature, as it often is to greater or less extent, a syrup of the Macrotys, Scutelaria, Caulophyllum thalictrodes, and Aralia racemosa (aa) will exert a very favorable influence. If there be much derangement of the liver, the

Podophyllin should be given. If the patient be debilitated, the extract of the Euonymus Atropurpureus will be better as an aperient, as it is quite tonic as well as cathartic, and seems to exert a specific effect on the liver.

The Restorative Bitters, or a syrup of Yellow Parilla and Wild Cherry, is a good medicine to alternate occasionally with either of the others. If there be much nervous irritation and hysterical symptoms, the extract of Leonurus Cardiaca will soon allay these symptoms. It should be used in doses of from fifteen to twenty grains, three or four times a day.

These or similar articles will usually fulfill all the *several* indications. But by far the *most important* remedy, and the one upon which we must mainly depend, is the *Irritating Plaster*. This should be spread from two and a-half to three and a-half inches wide, and of the proper shape and length to extend above and below the curvatures. I have often applied one from the neck to the sacrum. The plaster should be dressed in the proper manner every day or oftener, and continued for a sufficient length of time to remove all local irritation. It may take several months. I used it in the case of a lady where the deformity was of ten years' standing, and then really hideous. The spine was of the shape of the letter S, with one shoulder protruded while the other was depressed, and the hips were similarly affected, except that the sides were reversed. The Plaster was continued, keeping up a free purulent discharge from a surface nearly three inches wide from the shoulders to the hips—for half a year, from May to November—only removing the plaster for a day or two occasionally, and applying an Elm poultice when the sore became too irritable. My patient's general health was very poor, and all her friends considered her fast sinking into the grave, as had but a few years before been the fate of an elder sister through the same disease. In a few weeks under the constitutional treatment above advised, together with the Plaster, her general health became good, as it has since remained for five years. After the use of the Plaster for about two months, her spine began to straighten; and in six weeks more, so great was the elongation, her dress had to be lengthened on one side fully one-fourth of a yard. She rose to nearly her proper form and stature, but trifling *peculiarities* of figure remaining, instead of monstrous distortion.

Numerous *instances* have occurred in this city and elsewhere, of similar results under the same treatment. A young lady of this city had been under various surgeons, and submitted to a variety of plans; among which was the starving and bracing prescription of a well-known Professor of Surgery. She was fast failing, and began to be affected with chorea. Her difficulty was mainly a single lateral curvature, rendering her more than a foot shorter than natural. She was treated upon the plan here given, and restored to health and "straightened up" to her full height, "a fine woman" without a trace of disease or deformity.

A child in this city was treated by Prof. Morrow about the same time, and perfectly restored. In this case the head was thrown back nearly to the hips, the body forming the greater part of a circle. The child could not sit, or stand, or lie, except on its side. It had several severe convulsions.

After using the Irritating Plaster for a few weeks, direct attempts may be made to rectify the deformity. If they do not give pain, stays may be put on and so fixed as to exert a slight force tending to *straighten* the spine. Care should be taken however, that this force be not so great as to give the patient the least pain or uneasiness. In all cases continue the Plaster with your machinery. As the disease is removed by the constant purulent discharge from the surface, the muscles are at the same time stimulated to action; and you may do some good by *partially* supporting the body until the muscles assume their natural tone. Though my main reliance has been upon the Plaster, I have used mechanical *adjuvants* in most cases *after* the former had begun to take effect. As to the kind or form of apparatus, that must be left to the judgment of the surgeon, and adapted to the particular case.

RICKETS OR RACHITIS.

This is a peculiar disease arising from a deficiency of earthy deposit in the formation and growth of the bones. It generally occurs in *scrofulous* children.

The compact *surface* of the bones is *thin*. In the cellular structure composing the greater portion, the *cells* are preternaturally *large* and filled with a glutinous substance. In some places mere *cartilage* occupies the place of bony matter. The bones are in this state unable to support the body, and therefore pressure upon them produces great deformity. The muscles may be well developed, and in the progress of their growth the bones are frequently drawn out of their proper shape.

In some cases the DEFORMITY is but slight, only affecting the ankles and knees—causing the legs to curve so as to make the person "knock-kneed" or "bow-legged." The spine also may be but slightly curved. But in *bad cases*, such distortions occur as to change the whole figure and appearance of the patient. The head becomes greatly enlarged and deformed; the ribs may be too much curved or too straight; the sternum projecting; the spine with three or four curves in various forms; while the pelvis may be so compressed by the weight of the body as to push the two acetabula toward each other and throw the promontory of the sacrum forward, contracting the pelvis to a very narrow compass. The abdomen is sometimes greatly enlarged.

If the child lives to the age of puberty, the bones, notwithstanding these deformities, will become very firm and strong. Large ridges grow along their concave surfaces to strengthen them.

If TREATMENT is long delayed, it will be very difficult to prevent more or less deformity; but if you commence it as *soon* as the symptoms appear, you may often be able to arrest the disease so that all deformities will be remedied or prevented.

If called *early*, bathe the child several times a day in salt and water: let it be slightly warm at first, but gradually use it colder, until it may be used in a few days as cold as common spring water. Allow the patient the freedom of the open air; have as little clothing on it as the state of the weather will permit; and apply stimulants to all the joints and along the spine. The following liniment has been much used, and with good effect. ℞. Olive Oil ℥j, Oil of Sassafras ʒj, Gum Camphor ʒj, mix. This should be applied once or twice a day. The strength may be varied according to circumstances. If the surface of the child is very sensitive, so that this produces much smarting and redness, dilute it by adding more Olive Oil. The Scrofulous Syrup (Form. No. 14) should be given to the child if it be old enough to take it; but if not, give it freely to the mother or wet nurse.

The mother or nurse should live on animal food, and it is well to give her also the Alterative Syrup (Form. No. 11) while the child nurses, even if *it* also takes the medicine. Prof.

Baldridge recommends the Linseed Oil in the Liniment in place of Olive Oil. It is very good to be used as an aperient for the mother, if any is needed. Apply a Strengthening Plaster (Form. No. 22) to the legs between the ankles and knees so as to cover the shins, leaving the joints free. Remove the Plaster when the bath is used, unless the moving of it cause too much irritation; in that case let it remain, only removing it once in five or six days.

Brisk *frictions* with the bare hand should be applied to the whole surface as soon as the bath is given. Bathing the surface in astringent tonics occasionally produces a good effect. I have used a decoction of the Epiphagus Virginiana, and Cornus Florida. If the head be much distorted or too large, and the bones loose, apply a bandage so as to make slight compression, and bathe it with oak decoction.

No one medicine should be continued for a long time. You may alternate the Scrofulous Syrup with the Alterative, and this again with the Restorative Bitters; or you can make an excellent alterative tonic of the Bittersweet (Celastrus Scandens) and the Yellow Parilla (Menispermum Canadense). If the mother or nurse is troubled with acidity of the stomach, let her take freely of Saleratus or Prepared Chalk.

Machinery for the support of the limbs is of little service, and often does harm by pressing on the parts unequally and producing soreness. Carefully adjusted shellac cloth might answer the purpose better. I do not think much of such contrivances as the *lead cap*. The gummed cloth, or bandages, would be better for the head also.

SPINA BIFIDA OR HYDRO-RACHITIS.

This is a *congenital* disease or malformation, wherein there is a deficiency of the spinous and articulating processes of one or more of the vertebræ, with, in some instances, a lack of the proper union of the bones, from a defect of the intervertebral cartilage. The chief symptom is a *tumor* upon the spine, generally upon the lumbar region, which is filled with a limpid fluid. Sometimes the fluid is thin and watery, but more generally it is nearly of the consistency of the albumen of eggs. The tumor is easily depressed, but immediately resumes its former appearance on the pressure being removed. A *vacant space* can be felt between the vertebræ. The tumor, if not so large as to cause much tension of the membranes, will fluctuate. The fluid is situated within the membranous covering of the spinal cord, by which it is secreted in an immoderate quantity.

Not unfrequently the tumor inflames and ulcerates, breaking upon the surface, when the child soon dies in convulsions. If, however, the integuments and membranes be firm, the patient may survive and recover from the difficulty, without inflammation, even though no treatment be instituted. But in many cases, where we have reason to believe that nature, unassisted, would not be able to restore the patient, or to save its life, proper *remedial means* should be resorted to without delay. On first discovering the tumor, the nurse, or the ignorant or unthinking practitioner, is sometimes tempted to puncture it with a needle or lancet, and let off the fluid which is near the surface. This almost invariably proves a fatal wound. The child will soon be dying in convulsions. The tumor should *never* be opened under any circumstances. I am aware that puncturing is sanctioned by some of the authorities; yet, according to their own acknowledgments, a large majority of cases under such treatment die immediately. From what I have seen, I am satisfied that any case that can be cured with the operation, has a much better chance without it.

These tumors are not generally so prominent as to be noticed by the nurse at the first dressing of the child. Hence, the surgeon is not often called until some degree of inflammation has taken place. If the skin and membranes are very delicate, his chance for effecting a cure is then but slight.

Treatment, if attempted at all, should consist of such means as are best calculated to *discuss* the inflammation. Prevent suppuration or ulceration if possible. In one case, when the tumor was quite large and appeared inflamed, I succeeded by the early application of a strong decoction of White-oak Bark for four or five hours, by means of cloths wet in the decoction, applying them at first warm and afterward gradually colder. As soon as the inflammation had subsided, which occurred at the end of twenty-four hours, I applied a *compress* of raw cotton, wet in the same decoction, and a bandage moderately tight, so as to press the tumor down to a level with the surface. Under this treatment, the child recovered and the space gradually filled up with a solid deposit, leaving no trace of the disease, except a smoother surface in place of the spinous projections.

Before inflammation comes on, all your applications should be *cold.*

FUNGOID TUMORS OF THE SCALP.*

This disease, though rare in its occurrence, is so distressing, and sometimes so dangerous an affection, that it deserves our most strict attention. It occurs most frequently in children and young persons. I have never seen it on any one over twenty-five years of age.

It *begins* with small hard tumors, feeling like shot. They are at first entirely insensible to pressure, and usually continue to be so, until they attain the size of a common musket ball. It may be months, or even a year, before they will grow to this size. Eventually they become tender to the touch, and commence growing rapidly. As they increase, the hair over their surface begins to fall off; and finally, from their being merely tender to the touch, and painful when irritated or bruised, there is a constant aching. The substance of the tumor at this stage is soft, and seems to fluctuate, as though it were filled with pus; but if a lancet be thrust into it, only fresh blood will flow, and that most profusely. If the disease is not arrested, the tumor inflames and ulcerates, when large fungous growths sprout out, discharging a sanious fluid, mixed with blood. The pain is very severe, producing great constitutional irritation; and, if not soon relieved, the patient would doubtless die from exhaustion produced by the pain and consequent want of sleep and loss of appetite. As I have never seen a case of this kind, except those which I have treated and relieved, and as I have not been able to find, in any author, a description of the disease (unless it be under the title of "*Fungus hæmatodes*," which these tumors so strongly resemble, both in their character and progress), I could not say what would be the result of the affection if left to itself.

TREATMENT.—In the *incipient stage*, while the tumors are yet hard and insensible, and even when a little tender to pressure, you will generally succeed in discussing them by the application of strong alkaline stimulants—as the Tincture of Capsicum, in which as much of the Sesquicarbonate of Potash has been dissolved as it will take up. This should be applied three or four times a day to each tumor, as warm as practicable. But *after* the *inflammation* has commenced and the tumors are growing rapidly, no discutient or even soothing means will avail. Emollient applications, which one would suppose were suited to allay the pain and inflammation, only aggravate them. The only certain remedy that I have tried is

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* This article was accidentally left out of its more suitable place among Malignant Tumors, or Diseases of the Scalp.

THE CAUSTIC POTASH. Immediately apply this to the surface of each painful tumor, and let the pencil penetrate into the center of its substance. Then apply an Elm poultice, wet in warm milk and water, until the cauterized portions slough out. Wash off the sores with strong soapsuds, and change the poultice three times a day. If any of the characteristic appearances or the pain return, reapply the Caustic Potash. If the sores become indolent, or do not heal readily under the poultice and soapsuds, apply the Sesquicarbonate of Potash in powder a few times, and wash with a solution of the same two or three times a day, until a healthy appearance is assumed; then use simple dressings.

To the remaining tumors which have not yet become inflamed or tender, apply alkaline stimulants, as heretofore directed. Very little if any CONSTITUTIONAL TREATMENT will be required—unless the disease has advanceed to the stage of ulceration, and the patient's strength has become very much exhausted. *Tonics* should then be used, and perhaps stimulants. The vinous tincture of Columbo or Gentian, in doses of from half an ounce to an ounce, will do well. Cinchona or the Cornus florida flowers may be added with good effect. Nourishing diet should be prescribed, and the surface bathed in salt and water, cold, or, at least, moderately cool.

Practitioners are apt to mistake these tumors for simple tumefactions containing pus, and to plunge a lancet into them for the purpose of letting it off. They soon discover their error—blood instead of pus flowing profusely, with extreme aggravation instead of relief of the pain. An interesting CASE of this kind occurred in my practice a few years ago. The patient was a young lady about seventeen. The tumors had existed for six or eight months; but had remained small, insensible, and nearly stationary in size, until about two months previous to the time I was called to prescribe for the case.

During the latter period, they had been gradually growing and, becoming painful and soft, until at that time some were as large as hens' eggs, others of various smaller sizes, even down to that of a pea. She had from twenty to thirty in all. The larger ones had become so distressing as to deprive her of sleep, and she was rapidly sinking. A surgeon was called in, and, on examining the case, decided that pus had formed in the tumors, and immediately proceeded to puncture them. But on seeing the unexpected flow of blood, he acknowledged his error, and declined further treating the case. The pain and swelling rapidly increased, the wounded tumor turning out a large fungus mass. I was called about eighteen hours after the lancing, and found her in a very critical state, bordering on tetanus, from the excessive pain and morbid irritability. Presuming that anodynes and emollients would ease the pain, so that she could get some rest, and, by recruiting a little, be better able to bear the caustic (which I knew must be used), I applied an Elm poultice wet in an infusion of Opium and warm milk and water. This seemed for a short time to give some relief, but as soon as the narcotic effects of the Opium were gone, the pain returned with more violence, if possible, than before. The fungus continued to grow luxuriantly from the wounded tumor, while the others became larger and softer. I was again called, and without delay applied *caustic potash* to every painful tumor. The pain from the Caustic was for a few minutes very severe, but it soon subsided, and with it all other pain. The Elm poultice with the other dressings, and a few touches of the Caustic to other tumors, as they become painful, soon completed the cure. I had treated several milder cases previous to this; and, since that time, have had two others nearly as bad, besides some six or eight in a less advanced stage.

LECTURE XLI.

ACCIDENTS AND DISEASES OF THE EXTREMITIES.

PARONYCHIA—Location and varieties—Progress—Discutient means—incision and cautery—Constitutional measures—Whitlow epidemic!

WARTS—Nature and Variety—Cautery with acids preferred to excision.

CORNS—Kinds of corn, "bunion," etc.—Prevention and precautions—Mode of applying the specific—"Corn-curers"—BUNION—a distortion of the joint.

INVERTED TOE-NAIL—Description and effects—Barbarous treatment—A more merciful and successful one.

WHITLOW—FELON.

PARONYCHIA, the more learned name for this very painful affection, indicates its most common location about the ends of the fingers, or "near the nail." It occurs, however, between the joints of the fingers and of the hand. Owing to the peculiar structure of the parts in which or beneath which the inflammation occurs, it is one of the most painful diseases; the swelling, though often obstructed, is at last great, and the ulceration in which it terminates very destructive.

The SYMPTOMS are very much modified by the location. Four varieties may be noticed.

1. It may occur in or near the surface, just below the *cuticle*, but about the nail like a common "run-round."

2. Its seat may be in the cellular or fibrous tissue between the *cutis* and the *sheath* surrounding the tendons; or

3. *Within the sheath* of the tendons, under the vaginal ligament of the fingers, or it may be, upon the synovial surface: and

4. The inflammation may originate within the *periosteum*, between it and the bone. To this last, the appellation of "felon" is restricted by Webster, in accordance with some surgical authorities; but the distinction is too obscure for a *popular* definition. The distinctions are not very clear in many advanced cases.

The *articulating surfaces* may be either primarily or secondarily involved. The latter may also occur in the first variety, which is sometimes distinguished as "onychia." The pain is likely to be greatest or most acute in the *first*, the swelling in the *second* variety: it not unfrequently extends over the whole finger or hand, and beyond, producing, by its irritation, soreness and even swelling of the axillary glands. In the *third* case, the *pain* is the greater though the swelling is much less, in consequence of the firmness of the vaginal ligament. The progress of the disease is in this situation very slow, and when pus is formed it is a long time making its way to the surface. The *fourth* variety is still slower in its progress, and less acute in its symptoms, but commonly in its results destructive to the bone itself. In general the deeper the seat of the affection, the greater the danger of and *from* ulceration.

The inflammation, though commencing in only one of the structures mentioned, may involve the whole. While in the *cellular tissue*, near the surface, the pain is severe, and of a throbbing and itching character. The parts are also swollen and red, the redness being diffused. As the disease advances, the swelling determines to some point, generally near the nail. The fluid discharged is commonly sero-purulent.

When *deeper seated*, the throbbing, the heat and the swelling are still greater, and the pain also after awhile. It is often so intense, so intolerable as to allow the patient no sleep or rest. It is of a darting character, frequently shooting up the forearm, and even above the elbow. Considerable fever also often attends.

The disease may involve only one bone, or the whole finger; or it may originate in the palm of the hand. In the latter case the back of the hand may become enormously swollen.

If not properly treated, the inflammation will terminate in *suppuration* in three or four days. In other instances, especially when it is seated upon the bone, within the sheath of the tendons, or under the annular ligament, it may be eight or ten days before any well-marked evidence of suppuration takes place. Extensive sloughing is apt to follow the suppuration. Not only cellular membrane, the sheaths of the tendons, and the tendons themselves may come away, but one or more of the phalangeal bones be lost. When it occurs in the palm of the hand the disease may extend to all the bones, and much impair, if not entirely destroy, the use of the hand forever afterward. Such serious results by no means always follow; but neither are they of very uncommon occurrence when the disease is neglected or illy treated. You will meet with instances in your practice, of all degrees of injurious result, from a very slight deformity to a total loss of one or more of the fingers.

The CAUSE may be a bruise or external injury of any kind. Poisons introduced by puncture have been known to produce it. Very often, however, it can be traced to no known source.

The first SYMPTOM complained of is commonly a prickling sensation, as if a thorn or brier were in the finger. The patient will often attempt to extract the supposed offending cause with a needle or the point of a penknife. This sense of soreness or prickling may continue for several days, without any other painful sensation. This is *the* stage for treatment. After visible swelling and inflammation, it is generally too late to prevent the formation of matter, or to cause the inflammation to subside by resolution.

Resolution, however, may sometimes be effected even after considerable redness and swelling. I have succeeded, in the course of four or five days, in discussing these cases, after well marked symptoms of inflammation had displayed themselves. The prickling sensation continued, though it was certain that no foreign substance was the cause.

One of the best discutient means I have tried in these cases, is a preparation of Turpentine and Salt. Let the latter be pulverized as fine as superfine flour, and wet with the oil enough to form it into a thin paste. Apply that to the part and confine it there with a bandage. Apply the roller very tightly, commencing at the extremity of the finger. If the disease be in the palm, put on a compress, pressing very tightly on the part. Bear in mind that this compression is indispensable to success; it is more effectual in preventing or reducing the inflammation than any other means you can use—though it is not, therefore, necessary to omit other means in order to show how, with that alone, you can "defy nature to set up inflammation." By the bandage and (or *with*) the preparation above directed, I have even succeeded in several cases where I had reason to believe that *pus* had already formed. This application causes great heat and burning pain in the part. To prevent its getting dry, the bandage should be frequently re-wet with the turpentine, but not removed for several days—for a day or two, even after all symptoms of the disease have been subdued. Several failures have come to my knowledge, owing to too early a removal of this dressing, the patient supposing there was no necessity for it after the *pain* had subsided. The disease, however, is almost certain to return, if any tenderness or prickly sensation remains in the part.

Resolution has also been brought about by immersing the finger for a long time in lye, as hot and strong as it can be borne without abrading the surface. I have known cases cured by the Poke root, or the green root of the Arum triphyllum, bruised into the consistency of a poultice. A poultice of Tobacco and Spirits of Turpentine is also excellent for the purpose, and will generally succeed. Of all means that I know, the Salt and Turpentine is the most certain, but sometimes too painful. When this is found to be the case, the milder means may be resorted to.

When called too late for the preventive treatment, or when discutient means fail, we are directed by the authors to make a deep *incision*, even down to the bone, if necessary. But I have found another proceeding to answer a better purpose. The cutting operation will, in many instances, mitigate pain, but it often aggravates—to say nothing of the pain and horror of the cutting itself. A worse objection is, that soon after the operation large fungus growths are apt to shoot out, which give much trouble, aggravating the disease until the bone is destroyed. The better method, which I discovered by accident, and have now practiced for several years, is to

Apply the *Caustic Potash* to that point where the swelling appears nearest the surface. Cauterize deeply, so as to kill the parts down to the suppurating tissue, and then apply a Slippery Elm poultice. In the course of twenty-four hours it will open of itself, frequently much sooner. What is remarkable, is, that the *pain ceases* on the application of the Caustic, and gives place to a soothing sensation. This is the case in a large majority of instances, though not invariably.

If in the course of twenty-four hours the abscess does not open, it can then be opened by cutting through the eschar, without the patient even feeling it. But in many instances the application of the Caustic causes such a change in the action of the part, that the pus, when not in excessive quantity, is absorbed, and a sort of resolution even then effected. The cauterized wound is all that remains to manage. For this, and in all cases after applying the Caustic, put on a warm Slippery Elm poultice, and continue it until the suppuration, if any, has all ceased, the eschar has sloughed out, and the sore assumed a healthy appearance.

If the *pain* continues after cauterizing, the part should be immediately immersed in warm water or soap and water, and kept in it constantly until easy. Often there will be no relief until the pus is evacuated; but if the patient is not able to wait for a spontaneous opening, you can cut into the abscess even a few hours after the eschar has been made. If, however, the pus be evidently near the surface, it would be proper to open with the lancet.

If *fungus* arise, as it frequently will, you must keep it down with some Caustic. Burnt Alum, powdered Sanguinaria or the mild Potash, will be proper: the Green Salve (Form No. 17) is an excellent article in all cases of this kind, to prevent fungus growth and promote healthy action in the parts.

Constitutional remedies are by no means to be despised in this intense form of local disease. In most cases the patient will have more or less fever, with dry skin, costive bowels and derangement of stomach and liver. In such cases, give an active cathartic (such, for instance, as Podophyllum and Cream of Tartar), the warm Alkaline Bath, diaphoretics or nauseants. Small doses of the Tincture of Lobelia, combined with Laudanum, will have an excellent effect in allaying the patient's irritability (say Tinct. Opii ʒj, Tinct. Lobelia ℥j—dose just enough to slightly nauseate, and repeat every hour or two). This combination will not only allay the feverish condition and irritability of the nerves, but tend much to diminsh the local pain. If, in addition to this measure, the *hand* be immersed in warm water, or enveloped in a Slippery Elm poultice, wet with warm milk and water, or a poultice of the leaves of the Pyrolia Rotundifolia, you will generally succeed in getting the patient to sleep. Such means of temporary relief are very necessary in cases where the patient is in so irritable a state that he can not bear even the application of the Caustic, much less that of the lancet. Palliatives must then be used until the pus comes spontaneously to the surface.

The first *appearance* of this will be a light or purplish spot at the most prominent point. You can then and there open with the point of your lancet, or even a needle, without causing any pain at all.

If you are satisfied that the bone is affected, apply the poultice of finely pulverized white beans (mentioned under Necrosis). Inject also warm soapsuds, weak at first, and gradually increased in strength. Then make use of an emollient poultice.

In some cases the constitutional suffering induces great *debility.* In such an event you will find a good tonic in the Restorative Bitters (Form No. 7).

In the summer of 1847, myself and partner (I was practicing that part of the year in Erie county) had an extraordinary number of these cases to treat. Within two or three months we had some fifteen or twenty. This extraordinary *whitlow epidemic* drew our attention particularly to the subject, and enables me to recollect the circumstances very distinctly. With the exception of a few cases, they were all treated by the Caustic Potash, followed by soothing applications, Black Salve, etc.; and nearly all cured in a few days without difficulty—none, in fact, could be considered troublesome that had not been previously lanced. A subsequent application of the Caustic never made these as manageable as the others. Early in the season I was requested by a lady to examine the finger of her son, a boy of fifteen. I found it very painful and much distended. I thought it altogether too late for any attempt at discussion, and told them that nothing better could be done for him than to open the finger with the lancet. I was about to proceed to the operation, but found my patient not *man* enough to submit willingly, and too much of a man to be forced into measures. Irritated at his obstinacy, I thought of the Caustic as a substitute for the lancet, and partly as a *punishment!* I told him, finally, that I would put on a plaster that would ease the pain!—little thinking how *soon* and how much it would do so. Then placing a piece of pencil Caustic to the swelled part, I bound it on as quickly and as tightly as possible with adhesive plaster. He was told he might go to school and return if the pain became worse. I directed that on his returning and complaining, the plaster should be removed and a poultice applied. He never suffered a moment's pain afterward. The next day I learned that the abscess had opened during the night, and a considerable amount of matter been discharged. The poultice was continued for awhile, and then changed for more "healing dressings."

This case was a palpable hint. From that time we continued to use the Caustic whenever the discutient applications failed. I have had the best reason for continuing to use it ever since. It not only greatly facilitates the ultimate cure, but often affords immediate relief. Strange as it may sound to speak of Caustic Potash as an anodyne, as such it seems sometimes really to act in these cases. So great is the original pain, that the burning on the surface is felt only as a mere *smarting*, and this does not last more than from five to ten minutes. And when this goes off, the case is frequently relieved for good.

WARTS—VERUCCÆ.

These vegetative excrescences appear to originate in elongations of the papillæ of the true skin. As they are covered by the cuticle, they remain nearly insensible in parts where that substance is thick and habitually exposed. Thus warts may often exist in considerable numbers, without producing much inconvenience.

What is called the "seed wart," is rough, hard and insensible. Others are smooth and appear filled with fatty matter; and it is found that they secrete a fluid which is contagious, producing a crop of warts if applied on other parts or other persons. Other diseased secretions may have the same effect, Gonorrhœal matter, for instance, if applied to a cutaneous surface, instead of reproducing itself, as it does from a mucous surface, will occasion warts. The matter from these gonorrhœal warts, however, will not again produce gonorrhœa.

Warts generally appear without any assignable cause, and sometimes disappear spontaneously. They may, however, continue a long time, perpetuate their race and become a source of great annoyance.

Various applications have been resorted to for destroying warts, such as tying up, cutting out, and even burning off by the actual cautery. Some of these modes are very painful, and others even dangerous. The most effectual means I know of, as well as simplest and safest, is the same as I use for the removal of corns.

Let the *nitro-muriatic acid* be applied, by means of a pointed piece of wood, in the same manner as directed for corns (see page 554). One or two touches will change the color; after which it will generally disappear in the course of a few days, without causing any pain or trouble to the patient.

I was once consulted by a young man, whose hand was literally covered with large "seed warts," as he called them, which were a great annoyance as well as disfigurement to him. They were frequently bruised off, when the part became painfully sore, and the matter it discharged produced fresh ones. He had as many as twenty or thirty on each hand.

I showed him how to apply the acid, and gave him a phial of it, directing an application to several warts each day. In a few weeks he returned, and showed me his hands of a smooth and natural appearance.

This has been my method of procedure for several years past, and I have never found it fail or produce bad results, except that when applied carelessly or too extensively, the acid injured the sound part. The Black Salve has always removed this, and left no further appearance of a sore.

When warts are *cut out*, there is generally some small portion left which will grow up again, in a more troublesome form than before it was excised.

[Having been troubled with these pests on my own person, I have tried the most of the means recommended, but without success. Afterward I applied the Irritating Plaster to the largest of the warts, to the extent of suppurative action, with the result of a speedy and permanent cure. I have used it in quite a number of cases without failure.]

CORNS—CLAVI.

These well-known annoyances are really nothing but a horny thickening of the cuticle, destined, in the first instance, to protect the toes against the unnatural pressure of the shoe or boot. The Latin name *clavus* is from a supposed resemblance to the head of a nail; the obvious resemblance that gives rise to the vernacular name is much more *palpable*. There are distinctions, however, even in corns.

"*Hard* corns" are the most common, being those formed on the *top* of the toes, by the direct pressure of the leather.

"*Soft* corns" form *between* the toes, in consequence of their pressure on each other. They appear more like irritable warts, having great sensibility; while the hard or proper "corn" is insensible, and only occasions pain by pressure on the surrounding parts.

"Bunion," often considered a variety of this affection, is really a *distortion* of the metatarsal *joint* of the great toe, forming a broad swelling on the inside of the foot. The cause is generally the same as that of common corns.

When the corn is ripe, or rather completely formed, it has a membrane situated between it and the true skin, so that it may be removed without any abrasion of that surface.

As the first measure in the TREATMENT of corns, oblige the patient to wear boots or shoes large enough to relieve the toes from all pressure, cutting a hole in the leather if need be. Leave them for awhile, without being touched by anything unyielding.

The best of all prescriptions, then, for corns is, "go loose shod." This is a certain preventive, and the indispensable *condition* of cure. Loose boots and shoes, however, will not always be sufficient; and if too loose, so as to rub about, may be worse than tight ones.

If the parts *around* are inflamed, let them be soaked in warm water for an hour or more at night, or two or three times a day; and some soothing emollient be applied in the interval. Then, or at first, when no preliminary softening is required, *shave off* all the horny substance that can be easily removed; and

Apply to the centre of the corn a small drop of the *Nitro-Muriatic Acid* (i. e. equal parts of the Nitric and Muriatic Acids.) This is to be done by means of a piece of *wood*, tapered away to a point as fine as that of a darning needle. Dip this into the acid mixture, and convey the smallest possible drop to the center of the hard mass. The process may be repeated several times if necessary, watching carefully that the acid do not come in contact with the surrounding parts. If it does, it will give the patient intense pain, but only momentary: it will be all over, as soon as felt, and before he can complain. To prevent any risk of this, however, the surface all round should be covered with finely pulverized Saleratus, Chalk or Carbonate of Magnesia, either of which will neutralize the acid.

After this the common Black Salve may be applied, which with a loose boot or shoe, will then be all-sufficient. The corn will shrink up and come away, adhering to the plaster. If that does not soon happen, a little more of the acid may be from time to time applied.

Professed or professional corn-curers, in various parts of the country, have made a *secret remedy* of this "aqua-regia" (as the older chemists called the powerful liquid that alone would corrode gold). Their plan required them to apply enough of it to remove the horny mass during the operation, and enable them to elevate the "grain" on the point of their penknife. But this is not the best mode (except for the display of their secret skill.) Let the induration remain for awhile and come off of itself.

Some of our practitioners have been in the habit of adding the tincture of Sanguinaria to the mixture, but I can not see that any advantage results from the addition. The acids alone are all-sufficient. They must not be applied, however, when there is any *inflammation* or irritation about the corn. When this is removed, or, in the case of soft, irritable corns between the toes, when they have been prepared by soaking in weak Lye, the same means are available as before described.

In the case of soft and irritable corns, it is always well to prepare the parts for the operation of the acid, and to continue the use of the Black Salve for some time after its application.

By these means I have relieved patients who have suffered for many years, and been tortured by various applications, without any permanent benefit.

The Black Salve alone will often relieve, and sometimes effect even a cure. No means, however, can be of any lasting advantage, without "removal of the cause"—tight shoes or boots.

[My method of treating corns is as follows: Take a piece of soft sheep-skin, large enough to take the pressure off of the tender part, cut a hole in it the size of the corn, and apply with any adhesive material that will cause it to adhere. Now let the opening over the corn be filled with Black Salve every morning, and in a short time the troublesome growth will have disappeared.]

INVERTED TOE-NAIL—ONYXIS.

This is a very distressing disease of the great toe. The NAIL, from some accidental bruise, or the wearing of a tight boot or shoe, or both causes concurring, *curls down* at the sides, and becomes embedded deeply in the flesh. The whole toe *inflames*, swells, and soon suppurates or ulcerates at one or more points about the nail, whence large *fungus* growths frequently shoot out, which are extremely painful and tender to the touch. The patient is unable to wear a shoe or to use the foot. His sufferings are sometimes very great; so much so, indeed, that he is deprived of sleep; his appetite fails; he becomes feverish and greatly prostrated. I have seen a case where the toe or rather the fungus mass, together with the swollen toe, was larger than a goose egg, the whole foot and leg being more or less involved. Sinuous openings at several points were discharging unhealthy and excoriating pus. The nail was nearly covered over with the fungus, and the whole toe or tumor (for it had now no appearance of a toe) was so extremely sensitive that a fly lighting upon it would cause pain. These horrid cases were those which had been operated upon (some of them several times) in the usual mode recommended in the books, by cutting through the nail and pulling it off with the forceps, or dissecting it out with a knife. In addition to the operation, they had been treated with Nitrate of Silver, Acetate of Lead, Mercury, etc., but had all the while grown "no better very fast."

Against this barbarous, awkward and *unsuccessful* mode of treating this originally trivial though painful affection, I beg leave to enter a most decided protest. The measures generally recommended and practiced are not only unnecessary and cruel, but highly mischievous. On the contrary, the PROPER TREATMENT gives the patient little or no pain, while it is certain to afford permanent relief.

First, then, if you are called when the disease is in an *inflamed* and painful condition, have the part immersed in warm weak *Lye*, for from one to two hours each day, and in the intervals cover it with a large Elm poultice, kept warm. Continue this course of treatment, until all inflammation and soreness have subsided and the parts can be handled with impunity. This will generally take place in three or four days. Then, each time after the part has been in the Lye for half or three-quarters of an hour, press under the nail with a probe, at whatever point it is the most detached, *pledgets of lint* or cotton, as firmly as can be borne. Also, press the pledgets down at the sides, between the nail and the flesh which has risen up and projected over the nail, and fill it up so high that a bandage will press a little on the tents or pledgets. Cover these with a plaster of the Black Salve or some simple Cerate, to shield the parts from the air, and apply a *bandage*, moderately tight, over the whole. Then keep it freely wet in *warm water.* Some prefer wetting it in cold water; but I have seen better effects from having it warm.

These *tents* will from time to time pass further and further under the nail, and completely separate the flesh from it. It should be immersed in the Lye and dressed twice a day all the while.

As *portions* of the nail become *loose*, let them be cut off, until, by thus crowding the tents under at different points, and paring off the nail, you have removed it all. If there be any fungus or induration of the parts not removed by the Lye and dressings, powdered Sanguinaria, Podophyllum or Iris versicolor, or the mild Caustic powder, may be applied to remove it.

After the *removing* of the *nail* and the fungus, *in this manner*, the parts will soon assume the appearance of a healthy ulcer, and readily heal. Nor does the disease, thus cured, *return;* whereas, in many cases—in fact, in most cases—when the nail is violently taken off, the new growth is as bad as the old, and the patient continues to suffer as before.

It will sometimes take several months to effect a cure by the mode I have recommended, but it is not painful and is certain.

This is substantially the mode pursued by Dr. Beach, which has been successful in all cases.

[One of the best plans of treatment I have ever seen employed is, to drop hot melted tallow from a candle, upon the inflamed part, repeating once or twice if necessary to destroy exuberant granulations and remove the inflammation. It does this most effectually, so that in three or four days the inverted nail may be raised and paired off with but little pain. Then if the sufferer is instructed to keep the nail raised and well paired off, a permanent cure will result, with but the smallest amount of suffering.]

PART II.

OPERATIVE SURGERY.

LECTURE XLII.

OF OPERATIVE SURGERY—GENERAL PRELIMINARIES AND MINOR OPERATIONS.

Although external and more or less mechanical treatment is what primarily distinguished Surgery from the general "Practice of Medicine," its more technical and peculiar part, particularly that requiring the use of the knife, is again distinguished from the more *medical*, as "Operative Surgery." Much evil as well as good has arisen from the division.* Physicians have thought themselves privileged to be ignorant of the most necessary resources for external accidents and diseases; and in some countries, they even look down upon the business of the surgeon as a mere *trade*, while that of the physician only is the "profession." While the ordinary run of surgical cases are thus left in the hands of a presumed inferior class—(regularly educated surgeons being still in some parts of Europe obliged *by law* to reckon *shaving* among their operations, and to keep by them the necessary *implements*, as honorable members of the ancient craft of "barber-chirurgeons")—the more serious cases presumed to require operations, have been transferred to a set of *first-class surgeons*, whose business was *only* to operate. Hence, while their art has been advanced to the highest point of excellence, medical surgery, the proper treatment of slighter cases, and the prevention of the necessity for dangerous operations, has been shamefully neglected.

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* I find my opinion on this subject confirmed by the distinguished German author I had occasion to quote in treating of Fistula in Ano. "It is quite an erroneous view, which has long prevailed," says Blasius, "that of regarding the operative surgeon as a mere assistant, who has only to come in and execute the mechanical part of the business, as the physician shall judge it necessary. This view can only lead to mischief." He goes on to show why the operator, as soon as he takes a patient in hand, ought himself to be the physician. "The mere physician does not understand the operation, the local and constitutional reactions it occasions, the special medication or modifications of medical treatment it may require," etc. ---[Akiurgie, B. i, s. 5 and 6.)

In this country, Surgery stands higher than Medicine in popular estimation, every man who chooses to "doctor" being of course a physician, though he can not so easily profess to be a surgeon, that requiring more anatomical knowledge than mere amateur doctors can easily attain, and false pretensions to it being more certain to be exposed. Few even of the thousands that yearly graduate in our medical schools, give attention enough to their professors of surgery to practice all its departments. Most of them remain shamefully ignorant of even what is most necessary and indispensable in the emergencies or general practice. As, however, the more serious operations will undoubtedly continue to be generally performed only by those who are specially qualified for them, both by nature and education, some DISTINCTION of *cases* and *practitioners* seems absolutely necessary. That distinction should depend, however, not so much on the difficulty or danger of the operations themselves, as upon the necessity of immediate attention, or the practicability of their being *deferred*. In all serious cases, admitting of sufficient delay and needing special skill, the general practitioner of medicine is justified in calling in the aid of a professed surgeon, or a brother practitioner, who has had better opportunities of getting or *proving* more skill in this department. What a man is known to have done, he will always be thought better able to do than one who has not had the same advantage.

But no man is morally justified in holding himself out to any community as a physician, who is not able and ready to act in all the ordinary emergencies of danger to life or limb. Those operations, then, that like the dressing of wounds, ligating arteries for the arrest of hæmorrhage, adjusting fractures, reducing dislocations, cutting for strangulated hernia, etc., can not, without greater or less risk, be put off to another time or given over to other hands, should be performed by every medical man at the moment they are needed. For these, then, he should *specially prepare* himself. Other operations, that allow of time for "reading up" or refreshing his memory, he can perhaps afford to be less familiar with; or even, if he prefer, transfer to more ambitious or thorough-going rivals.

Keeping this distinction in view, I shall proceed to give you the necessary information for *acting for yourselves* in all cases, enlarging most on those in which you *must* act or be disgraced—as you ought to be.

It is not every man, or every medical man, that has the QUALIFICATIONS for becoming a GOOD OPERATOR. These I will enumerate, as they stand registered, with true German precision, in the elaborate work of Dr. Blasius. "One may be," as he premises, an excellent physician, without being cut out for an operator—may even be well enough acquainted with the principles and technicalities of operative surgery, without being himself able to put them in practice." First, then, "the operator must have had a complete medical education, and have devoted himself more especially and minutely to the study of anatomy," He is moreover to possess a "knowledge of mathematics and physics," and especially their application in "mechanics." 2. He requires acute senses (scharfe sinne), particularly that of tact or touch, "good eye-sight, or that which is good for near objects; adroit but steady hands, and general bodily agility." 3. In respect of "spiritual qualities, he is to be a man of courage and resolution, which, however, must not have degenerated into temerity, but be a union of the highest degree of calmness, circumspection and intrepidity." 4. To all these natural and acquired endowments, he must add "great practical skill (fertigheit), to be acquired only by repeated operations in the dissecting room, without which preparation none should venture to operate on the living. Even he who has begun to practice operative surgery should continue these exercises on the dead, in order to keep himself prepared for the rarer operations." I have given only the texts of my author, omitting his elaborate commentary upon each, lest you should think it my purpose to deter you from the work, in which it is my business to *encourage* as well as instruct you. Some may think I have already quoted enough to prove that *no* man can ever be a "good operator." *

In order to be prepared for every emergency, the practitioner must have the necessary *means* as well as knowledge. A surgeon altogether without instruments is in almost as absurd a predicament as a physician without medicine. He may and should himself be able to make, or to direct the construction of, such apparatus as can or must be made where they are needed. He must also *possess*, as well as be able to use, such as can only be furnished by a regular manufacturer.

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* Akiurgie, B. i, s. 5 et seq.

His *armamentum chirurgicum* need not, indeed, be the formidable and costly array that was once supposed necessary. A good workman requires few tools. In proportion as the art of surgery has been really perfected, its means as well as modes of proceeding have been simplified. Intelligent *principles* have taken the place of empirical rules; and a few instruments, of general availability, have superceded all the ancient cumbersome apparatus. A portable case now contains all that the surgeon needs, instead of a wagon-load, which his armory once amounted to.

The Pocket Case, indeed, will hold all the practitioner absolutely needs to have always at hand. This should contain abscess lancets, bistouries (straight and curved), scissors, forceps (the simple dissecting, and the dressing or ring forceps), tenacula, a spatula (for spreading plasters, etc.), probes (the common eyed and the gunshot), directors, needles (straight and curved), ligatures, lint, adhesive plaster, etc. The varied uses of most of these articles are obvious to any one who has sense enough to use them at all. A catheter, a porte-caustique, or any particular article may be added to this list, as the individual's judgment or occasions may require.

Besides this pocket case, a "doctor" should always have accessible dental forceps, cupping and scarifying instruments, a tourniquet, sponges, bandages ready rolled, and a good assortment of common splints wrapped ready for use. He will also have to be provided with Ether or Chloroform, as he knows not at what moment he may be called upon to perform operations when the pain and dread would endanger life. It is not yet generally appreciated how much the *risks* as well as the horrors of operative surgery have been lessened by the discovery of anæsthesia.

Any other instruments or appliances than those usually carried in the pocket case, or just mentioned, are always named, if not described, when giving directions for the particular operations requiring them. Of these instruments, huge folios of plates and descriptions are still being constantly published. These works are for manufacturers and professors, or inventors and improvers interested in particular parts.

The act of "doing up" or adjusting a wound or accessible diseased part is technically called DRESSING, and the appliances, medicinal or mechanical, are the

DRESSINGS.

Of any means used by the operative surgeon, few are of more importance, or require more skill and practice, than the simple roller or BANDAGE. Its usefulness indeed not being confined to this part of surgery, has been repeatedly insisted on. The technical varieties of "starched and laced bandages," "the suspensory bandage," (or sling), etc., are all contrivances of obvious significance. When any of them seemed to demand particular explanation, I have given it when directing their use. A French *savant* has shown with much ingenuity, that the "square bandage" or common pocket or neck *handkerchief*, may be so used as to answer all the purposes of all the many-named varieties and modifications of the roller, used or imagined by all our surgical writers. M. Mayor contends, that besides other advantages to result as he believes from the adoption of his "handkerchief system," great good would ensue from the general knowledge that means so simple were those which the surgeon would apply, and any other person, in his absence, *might*—at least provisionally. For the profitable study of reducing things so complex to simple principles, I would recommend my readers to Smith's Minor Surgery (pages 120–180), where a full account of Mayor's method is given.

Some of the other most important materials for dressings may be here mentioned. First and foremost, the *water-dressing* should never be slighted for its simplicity. The mere use of water as a *detergent* is not what is here meant, but its continued or repeated application as a refrigerant, emollient, and *anodgne.* For the last object warm water is indicated; for the second tepid. Cold water I do not recommend so much as some for directly counteracting inflammation; but as a styptic for the suppression of hæmorrhage from small vessels, and as a tonic applied to debilitated parts, its value can scarcely be overrated, even by exclusive hydropaths.

LINT, cotton and flax-tow, are all in use as applications to raw surfaces. The last article is much too coarse, when anything better can be had. Cotton is now in little esteem, except in case of burns or scalds. One objection to it is, that it is apt to be "fly-blown," and engender "maggots." If used, therefore, it should be perfectly free from specks. Good *lint* can always be made for the occasion, by scraping off with a knife the fine nap of old linen cloth. A supply of the manufactured or "patent lint" saves this trouble. *Charpie* is a sort of lint originally prepared in France, and much used (especially the coarse kind) as outside dressings, and for insertion *into* deep wounds, sinuous ulcers, etc., as an absorbent, compress or medium for applying medicaments.

Tents and Pledgets are such masses of charpie or other suitable material, the former of a conical shape, the latter cylindrical. Other modifications of form or size are semetimes nicely distinguished as "rolls, meshes, and pellets." As an inserted absorbent the *sponge tent* is a convenient expedient. It is a piece of sponge that has been saturated in bees-wax, which melts again and runs together, by the heat of the parts, leaving the pores of the sponge free to absorb other matter. Nothing of this kind, however (except where mechanically better for the sake of extraction) is superior to the *Slippery Elm* powder or *flour*.

Tampons are a larger kind of tents, used more especially for the purpose of applying detension or pressure, so as to prevent or suppress hæmorrhage. The common puff-ball (Lycoperdon bovista, also the Boletus igniarius) makes a good one.

A Compress is a sort of pad, generally made of folded linen, or other cloth, and used for the purpose of equalizing pressure under the roller, or of bringing it to bear on a particular point. Various shapes and forms of compresses are occasionally mentioned by very precise writers—"the triangular, the square, the cruciform, the graduated and the pyramidal." Sufficient good sense, at the right time, will recollect or *re-invent* the kind that best suits the case. The *sieve-like* or "cribriform compress" is very useful in allowing the escape of pus, and preventing other dressings from sticking to the wounded part. "The *perforated* compress" or a pad with a central hole in it, is very convenient for applying pressure around a sore.

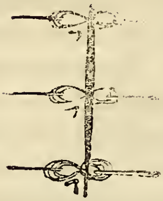
Among the means for keeping divided parts in the requisite proximity, the recently discovered or *invented* article, *Collodion*, is by far the most convenient in slight cases, like small cuts or abrasions. It is an artificial cuticle, with the advantage of transparency and considerable tenacity. In the case of longer incised wounds, or other solutions of continuity, where more force is required to bring or keep the parts together—i. e., to resist muscular contraction, ADHESIVE STRAPS (strips of cloth dipped in the Collodion or spread with some gluey preparation, usually "diachylon plaster") should be applied for a considerable distance beyond the parts to be supported. They are apt to occasion more trouble in their removal than application. It is always well and often indispensable to *shave* all the hair off from the surface on which they are to be placed—which surface must also be perfectly *dry*. To small sores or wounds the *Court-plaster* or "gummed silk" is a more convenient kind of sticking plaster than the diachylon, as requiring only to be wet instead of warmed.

THE APPLICATION OF SUTURES.

Divided parts sometimes require to be *sewed* as well as strapped together. This tailoring of human flesh is, however, much less practiced now-a-days than in the older and more mechanical surgery, and fewer *stitches* are found sufficient. In fact, the single stitches now used, are rather varieties of the ligature—a simple *tying* instead of sewing up. Directions need be given for only two of the technical varieties of suture—the *twisted* and the *interrupted*. The "Glover's or continued suture," i. e., complete sewing, is now rarely, if ever, employed on the *living* body. The "quilled suture" was a contrivance for dividing and equalizing pressure in long and deep incised wounds, by a quill, or small cylinder of some kind, laid over the edges of the wound and *under* the interrupted suture, the ligatures being tied over it. A skillful use of straps, compresses and the roller, supercedes the necessity for any such means. The "DRY SUTURE" is the least objectionable of any, the needle and thread being only passed through broad bands or bandages of adhesive plaster, placed above and below a deep incision—the strips of plaster are thus drawn and kept together, and of course the edges of the wound with them. Sutures of any kind are *indispensable* only when it is necessary to restrain the natural mobility of the parts, or prevent permanent muscular contraction.

The TWISTED SUTURE is as often used for the purpose of compression as for mere coaptation. The needle or pin is thrust through the lips of the wound, at right angles to its course (or to that of the vein or other part to be compressed), and left there transfixing them. The thread is applied round under the point and head or eye, in successive coils, crossing each other over the middle in the form of a figure 8. It is to be drawn tight enough to bring the divided or desired parts together, and keep them smoothly so; and then tied with a square knot in the center, (fig. 22.)

Fig. 22.



The INTERRUPTED SUTURE is, in reality, like the former, but a substitute for sewing. The needle is only used to introduce the thread or ligature; and each stitch, or rather *tie*, is unconnected with the others. Only one of these may be used: it is seldom that many are needed, when adhesive straps and other means are brought to aid. The curved needle, used for the purpose, should never be pushed so deep as to include more than the skin and a very small portion of cellular tissue beneath. Taking up anything more is avoided by making the puncture, as you *always should*, from the inside *outward*. In this direction it passes through much more readily, and gives less pain. To get the thread in this way through both lips more readily and conveniently, you should have a separate needle at each end. One being passed through from the inner side of each lip, they are both removed, and the thread tied just tight enough to keep the edges together, the ends being turned twice over each other at the first knot, to prevent slipping while the second is being made.

TRAUMATIC HÆMORRHAGE

Is an occurrence which ought rarely to be allowed to run on to a fatal or serious extent. *Every person* should understand enough of anatomy and *surgery*, to render at least provisional aid, until the requisite professional means and skill can be obtained. Arterial hæmorrhage may be distinguished from venous (which latter seldom requires the same precautions) by its brighter color, greater amount, and when the parts or vessels are exposed, by its partially interrupted gushes corresponding with the beating of the pulse. All who know that blood comes from the heart, should know whereabouts to put their finger on the main canals or conduits; and when they feel them pulsating, to press down on them toward the nearest bone. If the bleeding is from the upper extremity, it can be stayed by thus pressing upon the brachial artery on the inner side and a little above the middle of the upper-arm. If the injury extends to or above this point, the sub-clavian itself may be controlled by proper care—pressing it with your thumb, or a large key wrapped in cloth, against the first rib from above and behind the collar-bone. When the alarming bleeding is from the foot, leg, or thigh, the pressure should be made in the hollow of the groin, just below Poupart's ligament. When you want to secure permanent compression, and have not a torniquet, fasten a handkerchief round the limb, at or near the points indicated, with a hard pad on the course of the artery, upon which sufficient pressure may be made by twisting the handkerchief with a stick. When a main trunk leading to the opened branch can not be come at, let the divided extremity or wounded part of the artery be compressed with the finger until it can be "taken up." Even this last operation, when it is urgent, ought not to be delayed for want of means. Common needles and thread, at least, are always procurable.

Bleeding from wounds, however, when only the smaller veins, and smallest arteries are concerned, will generally soon cease of itself, or be restrained by simply confining the blood, pressing on the part, or applying cold and other styptics.

THE APPLICATION OF LIGATURES.

By "the ligature," is meant any *string* tied round a vessel or part for purposes of compression. By far the most important of these purposes is the suppression or prevention of hæmorrhage. Arteries are also sometimes tied for the purpose of cutting off supplies to morbid growths or hypertrophied parts. Veins sometimes require the ligature, though this is fortunately rare, as its application to them is comparatively a serious operation, from their greater liability to diffuse inflammation. Ligatures for the purpose of strangulation, or the removal of tumors and diseased parts, have been described.

LIGATING ARTERIES, or tying up the ends after division, is often the safest as well as readiest way of stopping the flow of blood. They have to be tied, also, along their course, when they are only wounded, and to prevent fatal consequences of disease in other parts. (See under ANEURISM). The same thing is sometimes done for veins when they are diseased. (See under Varix.)

In "taking up" an artery, as it is technically called, seize the extremity with forceps or tenaculum (pulling on it as little as possible, and cutting in, if necessary, to get at it); separate it carefully from any accompanying nerve, though for as little distance as possible from other tissues; pass your ligature round and tie it moderately tight, with *two turns* in your first knot, so that it will not slip while you make the second or "hard knot." The *thread* used should be large enough to allow of firm pressure, without the risk of cutting through the *external* coat of the vessel. The material generally made use of is silk. Animal fiber has some advantage over the other substances—at least that of *being softened*, if not also absorbed.

Besides avoiding to include nerves, or to separate too much from the connected cellular tissue, a third invariable rule is not to tie immediately below a large branch. The reason for these precautions is in the nature of the process that follows the ligature. The internal and middle coats of the artery are at once divided by the compression, or very quickly by the consequent inflammation, and their edges adhere, throwing out considerable lymph, in consequence of which there is a swelling of the vessel just above the point. In addition to this, the blood coagulates to the next branch above; so that when the external coat ulcerates, there is a perfect coalescence with the other two and with the neighboring parts, there being no flow or pressure of blood to interfere with the process. The ligature thus "comes away" spontaneously in from five to twenty days, according to the size of the vessel and other circumstances. The stagnant blood and effused fibrin become for a while very vascular, then gradually less so, whitening and generally changing in from twenty to forty days into a flat, fibrous cord. In the case of *veins*, their inner coat is not divided, and the inflammation not becoming adhesive, is more apt to diffuse itself.

Directions for cutting down to and securing PARTICULAR ARTERIES, will be given in connection with other operations or injuries about the particular parts involved.

Torsion of arteries, that is, *twisting* instead of tying the ends, is a practice much used by the French operators and by veterinary surgeons—or horse doctors. It succeeds in the case of small branches, and during operations is quite convenient for the operator. Any other advantage over tying, it would be difficult to establish.

Punctures and Incisions.

To proceed now to cases in which the surgeon is required to cause the loss of blood, instead of stopping it, or that part of operative surgery where the knife is used, "Akiurgy." The simplest and most general occasions for this, are when the *lancet* is needed or supposed to be needed. Indeed the use of this handy little instrument has long been associated with "*bleeding*" for bleeding's sake. Having given our reasons in full for renouncing and denouncing this time *honored* practice, before pointing out the substitutes for it in connection with inflammation (Lecture III), I shall give no particular directions for the operation of *venesection*, much less for that of *arteriotomy.* Every horse-doctor and *good* farmer knows how and where to raise and open a vein. As, however, they do not always, any more than professed or professional bleeders, know how to *stop bleeding*, and treat the *phlebitis*, which their phlebotomy may occasion, you should be always prepared for such accidents (see under Inflammation). Sometimes as serious consequences result from the more frequent blunder of not avoiding the course of the nerves, where they cross over the veins opened, or of cutting through the vein, and perhaps into a contiguous artery. This has frequently given rise to a necessity for amputation. (See under Tetanus and Aneurism.) Veins, however, as well as arteries, are always to be avoided in the *proper*

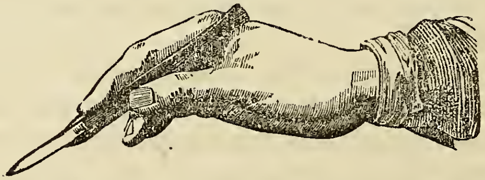
Use of the Lancet. The most frequent occasion for this, is the *opening* of abscesses. In treating of particular cases, I had occasion to point out where an opening by *caustic issue* was preferable to incision. As a general rule I may repeat that in chronic abscess, or such as is likely to require much treatment, the Potassa pencil is more than a substitute for the "abscess lancet." When it is necessary or desirable to *lance*, it should be done *freely*—you should really "open" so as to allow an easy escape for all the pus already formed, and *keep open* for the immediate exit of that which may afterward accumulate—or till healing by adhesion or granulation be complete. It is proper also in all cases, but especially where the incision is large or deep, to make it in the direction of, or *parallel* with, the muscular fibers of the part—or with tendons, ducts or blood-vessels. Precautions of this kind are sometimes vitally important.

All lancing is sometimes called *puncturing;* but generally when the lancet is required at all, much more than its point is brought into use. In opening bubos and other large abscesses, the bistoury is often a more available instrument. Mere puncturing is occasionally all that is required, as in certain operations on the eye, and in letting off serum from other parts, in anasarca for instance. But the needle, lancet and bistoury are not the only instruments which the operator should be skilled in the use of, for

DISSECTING

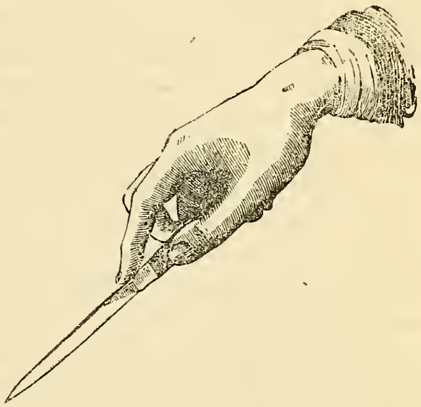
Is sometimes necessary on the *living* body, as well as the dead. In taking out certain tumors and making deep incisions for other purposes, a careful and skillful use of the *scalpel* is indispensable. The mode of proceeding is the same in dissecting for the practical study of anatomy and in practical surgery. "Dissecting," then, should mean the accurate *separating* of parts, with as little cutting as possible. It is well to practice three distinct ways of *holding* and *using* the scalpel: 1st, between the thumb and two fingers, as a pen in writing (Fig. No. 23), which is generally the most proper and convenient position; 2d, when the instrument is held in the hand like a common table fork (Fig. No. 24); and 3d, at the points of the thumb and two or more fingers, like the bow of a violin.

FIG. 23.



The webs of cellular tissue, or more membranous fasciæ, are to be raised and kept *tense*, so that the smallest possible *cut* at the right point may suffice. For holding up these parts, in operating on the living flesh, the *fingers* should be made use of, where practicable, instead of the forceps or tenaculum, as pinching with these is not only likely to give pain, but to injure or kill the parts contused. The fingers should also be made as far as may be, to do the work of the scalpel itself. When the different tissues or layers are *torn*, instead of being cut asunder, the division is more likely to be, in the sense we are now using the word, a true "dissection," and injury of even the smallest nerves and and vessels less likely to occur. When small vessels *are* *torn*, they will not bleed as when they are *cut*.

Fig. 24.



ISSUES, CAUTERIES, INOCULATION, ETC,

When it is designed to set up and keep up a suppurative drain from a particular point, the object is sometimes effected by simply opening the integuments with a lancet, and inserting some foreign substance, as a pea, to act as a constant irritant. These *mechanical issues* may prove very mischievous if too near a bony prominence, or where they would interfere with the free play of the muscles or tendons. A somewhat less objectionable means for getting up a suppuration, but still too mechanical, is the *seton*. This was much practiced by the older surgeons. A portion of the integument is pinched up, and a very large needle, called "the seton needle," is run through, leaving behind it a whole skein of silk or other thread. This irritant is pulled a little in one or other direction every day, or as often as is required to keep up the suppuration. These old horse-doctoring practices, with *knife* and *rowel*, are quite unnecessary. They are constant sources of pain and irritation, while acting, if not permanently injurious. Whereas

The CAUSTIC ISSUE, when any is needed, causes more pain in the first place, and none at all afterward, while a constant drain can be much more easily kept up from it. Our common irritating plaster, placed over it, insures any desirable amount of suppuration. When it is designed to have this plaster act speedily over a larger surface than it would be proper to prepare for it by the Caustic, a common fly blister or any of the quicker vesicants (like Ammonia or Acetic Acid) may be previously used. Abscesses may be not only opened, as they often should be, by Caustic issues, but encouraged by them to *point* the sooner, while they draw off excessive irritation from within.

The ACTUAL CAUTERY, i. e., literal burning, is a relict of the surgery of barbarous times still occasionally resorted to, though no well-informed surgeon of the present day need ever have recourse to it. It is directed to be performed by means of red or white-hot iron. The MOXA is a modification or slower application of this, introduced in recent times from the Chinese "practice of surgery," where we are told it is a prominent operation or charm.

ACUPUNCTURE is another oriental practice, which has been resorted to with apparent advantage, in neuralgia and other obstinate affections. It consists simply in thrusting deep into the affected part several needles, giving them a rotary movement. They have been pushed, it is said, into the most vital organs, without injury.

ELECTRO OR GALVANO-PUNCTURE is when two needles, so inserted, are made the discharging and receiving points of the current, so as to oblige it to pass through a desired part. Various kinds of metal have been used in these *experiments*, and with very various success.

Vesication is sometimes produced as a means of introducing medical substances or influences into the general system. It is believed that the constitutional effect of any drug can thus be secured after proper trituration or combination. It is called the *endermic* method of medication. There will seldom be occasion for it, when care is taken to have the *whole* external *surface* a source or channel of healthful influence. (See Simple and Medicated BATHING, Introduction, page 7 to 16).

INOCULATION is a mode of artificial or prophylactic poisoning, analogous to endermic medication. It means the insertion of contagious matter for the purpose of exciting the same specific disease that produced it. It has been experimented on and proposed in a great variety of diseases; and was really of great use, and greatly needed, for small-pox, before Jenner discovered a substitute for it in the cow-pox giving rise to the particular kind of inoculation, hence called

VACCINATION.

This is an operation which every practitioner of medicine ought always to be prepared with the means of performing—nay, ought to be under a penalty for not seeing that all within the range of his influence have it done, and repeated often enough to avoid altogether, and thus extirpate from the earth, one of the most horrid scourges that it has ever been plagued with. This might long since have been done, for the civilized world at least, had the necessary zeal and caution been exercised. The MATTER so called (which, however, should be clear *lymph* taken before the vesicle has reached the suppurating stage, or has any inflamed areola, and from an otherwise healthy patient) should be very carefully preserved from the air, when it is intended for future use. A common and convenient way of keeping it is in bees-wax. The best plan when convenient, is to have the person to be vaccinated and the person to be vaccinated *from*, both together, and prepare the former for the immediate insertion of the virus before it is taken from the latter. Some vaccinators scrape off the cuticle, others make a good deal of cutting and scarring. These are both unnecessary and cause superfluous irritation. It is sufficient to make a few oblique punctures with the point of the lancet, about the eighth of an inch in length—if without drawing any blood, all the better. Then wet the point of the instrument in the fresh lymph, to reinsert it for a moment into each puncture. If you have only the scab or dried matter, it may be dissolved in water or slightly moistened, and a minute portion inserted into each orifice, allowing it to remain there for a short time, at least, without disturbance. To avoid irritation, the part had better be loosely bound up, or have court plaster over it after getting dry.

For the CATHETERISM or the clearing and enlarging of various accessible canals of the body, which might have been taken up in this connection as a general subject, as well as the EXTRACTION of foreign substances from such canals or cavities, see under the particular heads. Obstruction in the trachea or œsophagus, has been treated of as CHOKING, in connection with diseases of the throat; and the extraction of TEETH (which when diseased may well be considered "foreign substances") in connection with the disease they give rise to, (page 336.) Other cavities will be considered in connection with operations needed in or near them: Catheterism of the Eustachian Tube, with disease of the mouth or ear—of the Urethra, with those of the contiguous parts.

EXCISION OF TUMORS.

The only difficulties or dangers that attend the removal of tumors by the knife, are the hæmorrhage that may arise from cutting *bloodvessels* and the pain and other disagreeable symptoms that may follow from wounded *nerves*. [For the different kinds of tumors and the cases or stages in which a resort to the knife is most or least advisable, see Lecture XVI.

If the tumor be small and near the surface, *one* straight *incision*, through the integuments and cellular substance down to the tumor, is sufficient. The cut should always extend far enough at each side beyond the margin of the tumor, to enable you to dissect it back and distend the lips wide enough. This will allow the tumor to be taken out without straining upon the ends of the wound, which would give severe pain. After laying open the skin—if it be an ENCYSTED TUMOR, cut freely through the sac and take out the contained mass with your fingers, the forceps, or a tenaculum, which may be hooked into it so that considerable force may be used. If it has no CYST, carefully dissect up the skin and cellular membrane from one side and turn out the tumor, continuing to dissect from the same side as far as you can or until you get it nearly or quite out. If this be not practicable, after passing its center, begin on the other side and complete the dissection. In handling the wound during the operation, take hold of the *skin* with your *fingers*, or direct the assistant to do so, using no forceps to this part if you can possibly hold it without, as the pinching gives much pain. You may seize the *tumor* with forceps if necessary, or hook a tenaculum into it, as it is not very sensitive.

If the tumor be LARGE it may be necessary to make a crucial, elliptical or triangular incision, and dissect up the flaps in different directions before it can be removed. If it ADHERE to tendons or muscles, care should be taken not to wound the tendons or cut away so much of the muscles as to impair their use, unless this be necessary for the removal of *diseased* formations.

If large ARTERIES, *veins* or *nerves* are involved in the tumor, or lie near it, great caution must be exercised not to injure them; or if arteries are cut during the operation, you should stop proceedings and tie bleeding vessels the first thing, unless the hemorrhage can be restrained by the finger of an assistant or by a compress or tourniquet, as when you are operating on a limb. In this case you may finish the operation before applying ligatures. In operating about the *neck*, special caution and steadiness of hand are required to avoid both nerves and vessels. It is much more dangerous to wound the jugular vein than the carotid artery. The artery may be cut and tied with safety. A wound in the jugular vein, if it admit any air into its cavity (which it is very liable to do), is quite sure to prove fatal. Fatal inflammation also is much more likely to occur from the tying of large veins than arteries.

When there is no malignant disease connected with the tumor, the skin healthy and the whole mass taken out, after securing the vessels and arresting hæmorrhage, cleanse the wound of all clots and extravasated blood, and bring the lips together; secure them by adhesive straps or sutures; and dress, as in the case of any other simple wound, so as to promote healing by the first intention.

If the tumor be MALIGNANT or at all *suspicious*, as where the skin closely adheres to it, or is in the least discolored, or where the vessels over and around it are in a varicose condition, *excise completely* all the discolored skin, together with the tumor. Even *painfulness* or *itching* in the tumor will be a sufficiently suspicious circumstance to demand the same precaution. The best mode of operating in such a case, is to fix a tenaculum, or the chain hooks of a common dissecting case, to the top of the tumor. Pull firmly upon the tenaculum or hooks, so as to put the skin and cellular tissue violently upon the stretch. Then with a scalpel or bistoury make a circular incision, through the skin, around the base of the tumor, large enough to extend at least three-fourths of an inch, if practicable, beyond all trace of the disease or discoloration. Continue to pull on the tumor, and if possible, *pull it off*. But if it adhere too firmly, separate the cellular tissue with the knife. If any arteries are cut (which is less likely to occur in this mode of operating), take them up—apply an Elm poultice to the surface, and promote *suppuration* and granulation.

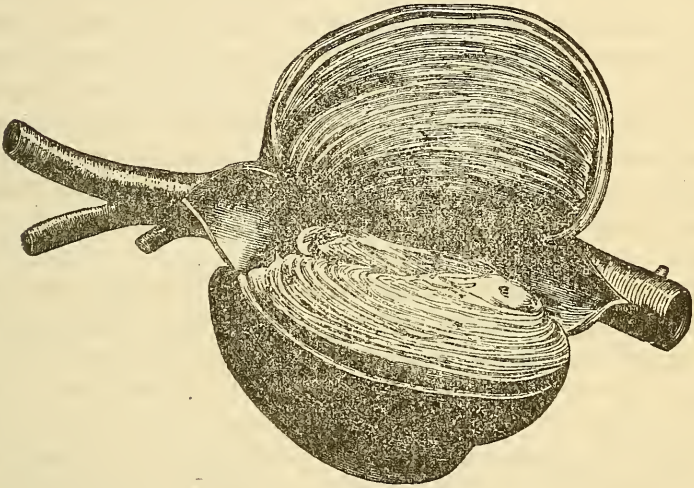
These rules apply of course to all CANCERS or CANCEROUS TUMORS, where the knife is only used as auxiliary to the cure, by removing a portion or all of the diseased mass at once, instead of doing it by the slower means, which, however, are afterward indispensable to a safe treatment.

In nearly all cases of large tumors, it will be better to have the patient under the influence of Ether or Chloroform; and it *may* be very necessary in quite small ones. Even for the operation of the Caustic, if the patient's resolution can not be sufficiently roused, there will be far less risk from the anæsthetic agent than from the nervous excitement and shock of fear. The danger to life from the Ether, it should be remembered, is little if any, and even the Chloroform (which for myself I think unnecessary when the former article is found effectual) may by proper precautions be disarmed of all its terrors. The person who administers it should always have *Ammonia* ready at hand to use as an antidote, in case the insensibility threaten to be that of death. Prof. R. S. Newton, who I believe was the first to introduce the article into this city, has had reason to congratulate himself in having early determined on this precaution. In one case operated on by him (when the condition of the patient absolutely required the article, though contraindicated by organic disease of the heart), the Ammonia completely restored animation after pulsation as well as respiration had entirely ceased.

ANEURISM.

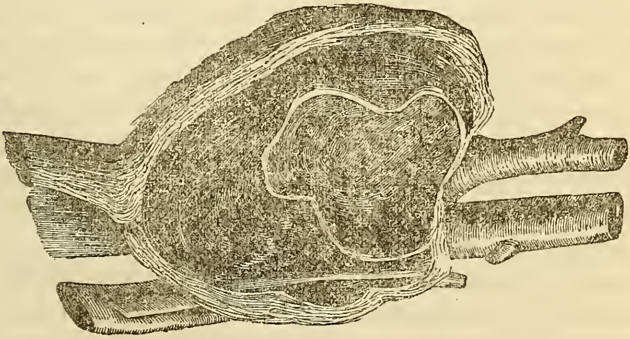
Aneurism is a diseased state of an artery, inducing dilatation and subsequent rupture. Some suppose a rupture of the internal coats, if not also of the external, to be a first or early occurrence. Whether formed by and within, or only from and about the vessel, an enlarging and pulsating "tumor" is the characteristic result. When much of its capsule or sac is not constituted of any of the proper coats of the vessel, but of a cyst produced from the effused lymph surrounding an orifice through which it receives its *deposit* of blood, it is called FALSE ANEURISM. When there is no such covering, the artery only continuing to pour out its blood into the cellular tissue, it constitutes DIFFUSED ANUERISM. When the effusion runs along between the coats of the artery itself, it is sometimes distinguished as a *dissecting aneurism.* The *exciting* CAUSE may be local injury, violent bodily exertion or strong mental emotion. The patient often refers to a strain when "something was felt to give way." There is generally a *predisposing cause* in some form of cachexia, such as syphilis or mercurialism.

Fig. 25.



The DIAGNOSTIC SYMPTOMS are obvious: The swelling beats synchronous with the artery, along the *course* of which it occurs, and can be emptied of its contents by simply pressing on the vessel above it. The pulsation is noticed from the first, while the swelling is small and soft, thus distinguishing the case from

Fig. 26.



a *tumor* proper, which generally begins hard, and only pulsates while pressing on the artery. The latter is also unaffected by compression on the artery, movement of the part or the patient's change of position.

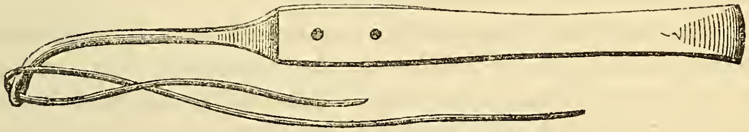
In its PROGRESS, the coats or boundaries of the aneurism may for a time be strengthened by adhesion with surrounding parts; but these are absorbed as the dilatation proceeds, even bone presenting no obstacle. When it reaches the surface, a mucous canal or internal cavity, it bursts, and fatal hemorrhage is often the consequence. Aneurism may become its own cure by more or less complete coagulation of the blood; by sloughing, in which the artery is included, so as to block it up, the same as when small branches are cut through; or by pressure of the effused blood upon the vessel, with a similar result to that of tying it up. This last occurrence is *the* indication of cure; for in

TREATMENT, *compressing* should be the rule, *ligating* the alternative. Compresses should be applied along the course of the artery, and perhaps to the tumor, in the early stage, but not so firmly as to promote absorption or favor inflammation. Contrivances for these purposes will readily occur to the practitioner. The great difficulty is to prevent their being removed or disturbed by the patient. The *aneurism tourniquet,* lately devised, promises to be an available resource, possessing the peculiar advantage of a lock and key. The surgeon, after securing it, can put the latter in his pocket. It is better to have the pressure bear most on two points, both above the aneurismal sac, so that one may be a little slackened without allowing free course to the blood. Compression has been at various times the fashion, but again abandoned, apparently from indiscreet and injudicious modes of using it. When the sac is very large, with thin walls and degeneration of the surrounding parts, it manifestly requires caution. As to the mode of applying it, gradual compression seems, in some hands, to have better success, probably from inducing coagulation, than the attempts to at once obliterate.

In many cases and in many parts of the body, however, the LIGATURE is the only resource. There are three principal ways of applying it: *below* the sac, with the view of inducing coagula—both *above* and *below*, the sac being then opened—and that of Hunter, now generally adopted, which consists simply in ligating the vessel at some convenient point between the affected part and the source of circulation. The second method, tying below as well as above, is necessary in varicose aneurism (as after bleeding, when the venesection has been also arteriotomy), when the blood is diffused or ready to burst out and become so, and where there are numerous anastomosing vessels, as in the back of the hand and and foot. Tying beyond or below the sack alone may be proper where it can not be done above. The greatest triumphs, however, of modern surgery, have been from the simple operation of Hunter. It is contraindicated in *false* aneurism of great extent, in general disease of the arteries or the aneurismal diathesis, and when nature has fairly taken the case into her own hands by the circulation ceasing in and below the part, or by gangrene or caries occurring in its vicinity. Where the neighboring vessels have become thickened and unfit for additional vicarious duty, success will be questionable.

In operating, cut or dissect down at the point chosen with a scalpel or bistoury, and when you have reached the surface of the vessel, work round it with the blunt end of the ANEURISM NEEDLE (see plate fig. 27), separating the accompanying nerve or vein from the artery, by *pushing* rather than cutting through the cellular substance that connects them, thus avoiding the danger of puncturing such vein or nerve. This is especially necessary where a large vein or nerve is inclosed in the same sheath with the artery, as in the neck or thigh.

Fig 27.



It would be difficult to say how far, or how high, this operation may be carried. After the operation, a general expansion of the branches or other arteries supplying the same parts, ensues, and their complete circulation is soon re-established by anastomosis; but, after a time, a few vessels only take on the duty of increased supply, and the rest contract again to their original dimensions. The subclavian has now been frequently tied, and saved life, where nothing else could have done so. Both common carotids have been successfully obliterated; and

Sir Astley Cooper even tied the descending aorta with, it was believed, good results—for a time.

[In the treatment of aneurism by compression, the object to be accomplished is to effect coagulation of blood in the sac, and by the organization of the coagulum, and contraction of the walls of the vessel to close the tumor. Compression of the vessel on the proximal side will seldom accomplish this, as the aneurism is emptied by the artery below. The best authorities therefore, recommend, that compression be first applied to the distal side, and afterward to the proximal, the aneurism being thus filled with blood, and coagulation taking place, it is filled up.

Manipulation has also been proposed as a means of closing an aneurism, and several successful cases are reported. Compression on both the distal and proximal sides having been kept up for two or three days, the aneurismal sac is then kneaded with the hand, for the purpose of loosening the clots which have been formed. This is repeated every few days until the circulation is arrested. It is only applicable in aneurism of the extremities, as in the vessels of the neck, the clots might be carried to the brain and cause death.

It has also been proposed to cause coagulation, by the insertion of metallic pins or needles into the aneurism, to the amount of a dozen or more. But little success has yet attended the practice, though it does cause coagulation of the blood. In aneurism of the popliteal artery, cures have been effected by forcible flexion of the leg for some weeks. As one of the simplest and least dangerous methods, it is worthy of attention. Dr. G. Owen Rees, reports a cure of popliteal aneurism successfully treated with Acetate of Lead. It was administered in doses of from three to five grains, with one grain of Opium, three times a day; in five weeks the aneurism was consolidated and he was discharged cured.]

VARICOSE ANEURISM and ANEURISMAL VARIX (results of "venesection" into an *artery*, permanently connecting it to the vein, with the addition, in the former case of a "false aneurism" between them) require, like false aneurism in general, and large diffused aneurism, the double ligature.

NÆVUS, often congenital, appearing as a red, shining spot on the skin, and liable to enlarge and bleed profusely, is a similar condition of the small arteries to that of the veins in varix.

Large nævi are called "aneurisms by anastomosis." The tumors they occasion are distinguished by their pulsation, their gradual enlargement, and final *fatal* ulceration. (Their treatment was given under the head of VASCULAR TUMORS, page 209).

VARIX.

The enlarged, tortuous and ultimately thickened state of the VEINS, so called, has been already treated of [see pages 369, and 380–1]. I allude to it here for the sake of order and to protest against the operation sometimes called *cirsotomy*. In reviewing five methods of treatment—puncture or incision, extirpation, ligating, cauterizing and obliteration (by compression and inflammation)—Blasius enlarges on the danger of phlebitis in all, but especially when the diseased vein is *tied*, and cautions us against suppuration. Suppuration from the *surface* (excited by the Irritating Plaster in connection with compression) is a counter-irritant and alternative for this occurrence, as we have abundantly proved by experience.

RECICATRIZATION AND RHINOPLASTICS.

Still another kind of general operation may be mentioned in this place. It belongs to *restorative*, though not at all to medical surgery; unlike most operations, it is constructive instead of destructive. The possibility of restoring lost parts of the body must have been thought of ever since there were sufferers from such losses, particularly when they were such as to occasion positive ugliness. Usefulness itself was secondary to this consideration. Atificial noses were attempted before artificial legs. We are not constituted like some of the articulata, from whose bodies or trunks new limbs will sprout out when the old ones have been amputated. Within restricted limits, lost flesh may be restored by the process of granulation, but the full-formed body seems to lack the principle of completeness or regard for symmetry and appearance. After a burn or scald, the vesicated surface will skin over just as it may happen to have contracted; and the same will take place on any raw surface left by "solution of continuity," however much flesh may be wanting to complete the form now so defaced. When raw surfaces, not originally connected, are allowed to remain in contact, they coalesce as readily as parts separated by simple incision in "union by the first intention." This might be supposed to have early suggested a plan for filling up deficiencies; but the difficulty was to know where to get the spare flesh. It really appears that some centuries ago it was procured from other person's bodies, if not the bodies of other animals—just as before the invention of artificial teeth, the rich ladies in some parts of Europe used to have sound teeth, from the jaws of their poor dependents or neighbors, transferred into their own empty sockets. So, we are informed by history, the Arabs, during the middle ages, and even the Italians on their first introducing this kind of surgery into Europe, in the fifteenth century, used to cut off the *nose* of a slave now and then and *engraft* it on the face of his master or other superior! These are the "Taliacotian operations" (so named from an Italian surgeon Tagliacozzi, who was reputed to practice it) satirized in Hudibras. The exaggerations and even superstitions connected with the matter, occasioned it, as usual, to sink again into undeserved neglect. It was not until within the present century that the plan of making artificial noses was again revived in Europe and America, though it was mentioned by the oldest Greek medical writers, and was always in use among the Hindoos "time out of mind." The plan now generally practiced of taking the material for the new nose from the forehead, is one of the old Indian methods. The general principle in these transplantings is, that the part removed must be kept for a time in connection with both its old and new locations, in order that some circulation may be kept up until the vascular reorganization is complete. (See further in connection with particular localities.)

Cicatrices from wounds, ulcers, and especially burns, sometimes take place in such a way as to occasion much deformity, if not deficiency in the use of the parts. The general cause of this is permament muscular contraction, as that of the platysma myoides forming "wry-neck." Such a state of things may sometimes be remedied by simple *incision*, dividing the contracted fibers; but more generally the old cicatrix has to be completely *dissected out.* Care must be taken in dressing the new wound, and regulating the position of the parts during healing, that a repetition of the accident do not occur.

[For other peculiar *means* and *methods*, not mentioned or fully illustrated in this lecture, see Practical Resources, page 7 to 24.]

LECTURE XLIII.

DISLOCATION OR LUXATION—GENERAL DIRECTIONS FOR REDUCTION AND TREATMENT.

This is a subject which requires the special attention of the general practitioner of medicine. There are few accidents which demand more prompt redress, and in which professional skill, or the want of it, is more manifest. It is a department of operative surgery that can not be safely or conscientiously neglected by any one who intends to practice medicine.

By "luxation" or "dislocation," which almost defines itself, is meant the displacement of a bone from the surface of another bone, to which it is naturally articulated. Its distinction from "fracture" is sufficiently obvious in the abstract. When, however, the two accidents occur at the same time, doubt and difficulty may arise. These cases, called compound and complicated, I will take up separately, after drawing your attention to Simple Dislocation and Simple Fractures.

The readjustment of the separated bones is called the "*reduction.*" If any considerable time has been allowed to elapse, before this is effected, the operation becomes very difficult and sometimes impossible.

The true nature of the difficulty is not always obvious; and the consequence of the medical attendant's failing to ascertain it in time, is that his patient must remain crippled for life.

The student must not rest satisfied with understanding and recollecting the bony frame-work of the joints, but study their whole mechanism, including the arrangement of the cartilages and ligaments, and the insertion and action of the muscles. The uses as well as structures of every joint, the play as well as position of every muscle, should be familiar to the mind. The fact of dislocation is as often ascertained by the unnatural position and limited motion of the limb, as from the changed appearance at the joint itself. This is the case, for example, with the shoulder, elbow and hip. The precise nature of the displacement, if not the fact of any displacement at all, can often be certain only to one who has an exact anatomical knowledge of the parts in all their connections. It is, however, important that the surgeon be familiar with the *external shape* and appearance of the joints, in the living subject, as well as their structure and connections from investigations on the dead.

It is sometimes a very difficult matter, even for the most skillful and experienced, to discover the real nature of the case, in consequence of the swelling that is apt to occur. Hence the importance of examination and adjustment as soon as possible after the accident. Too often, however, the surgeon has not an opportunity for this. The direct injury done by the violence, which caused the fracture, or the subsequent irritation from the unnatural position of the parts, has brought on inflammation, which completely prevents any opinion being formed from external appearances. Even the position and movement of the part are sometimes insufficient criteria, as fractures and even sprains may simulate dislocation. In such cases the practitioner should be cautious of giving a positive diagnosis, until he has so far reduced swelling and inflammation as to be able to make the proper examination.

The SYMPTOMS of dislocation, it must be borne in mind, may be a change in the outward *form* of the joint, a greater or less alteration in the *length* of the limb, or in the direction of its *axis*. This last symptom, the altered axis, or *position* of the limb, is chiefly referable to muscular action on the parts in their abnormal position, since the ligaments are generally so extensively lacerated as to retain but little influence. The form of the *head* of the bone has a considerable effect on the direction of the *limb*. Thus, when the head of the thigh bone is thrown up, on the ilium, its easy mobility under the action of the abductor muscles, occasions the knee and foot to turn inward.

Immediately after a dislocation has taken place, the individual not unfrequently retains the power of *moving* the limb; he is neither so crippled nor *deformed* as to manifest the serious nature of the injury. But in a very short time the muscles become contracted and rigid, and the limb appears permanently deformed.

In some dislocations, the limb being shortened, most of the muscles are *relaxed;* while in others the limb is elongated and the muscles put upon the *stretch,* so much so in some cases, as to cause them to be ruptured. The consequence of such complications is great effusion as well as inflammation. The amount of effused blood will be in proportion to the injury done to the muscles, or to the bloodvessels themselves.

Severe *pain* may be occasioned by pressure of the bone on sensitive parts, or its exciting inflammatory susceptibility in parts otherwise insensible. In this way it may even endanger life. Paralysis by pressing on a nerve is not unfrequent. In dislocation of the head of the humerus into the axilla, for example, it may not only impede nervous communication with the arm, but cut off the due supply of blood, and in this manner cause atrophy as well as paralysis. The dislocated clavicle may press on the windpipe or œsophagus.

The external *prominence* caused by the *head* of a bone may be transferred to a considerable distance from its accustomed place, and the depression in the latter place becomes a corroborating symptom, as well as the mobility of the new prominence. This displaced prominence may be greater or less than the original one. The protuberance of the trochanter, for instance, is diminished by the new location of the head of the femur; that of the elbow is greatly enlarged by a backward luxation of the ulna.

If the dislocation has been allowed to remain a considerable time unreduced, there will be more or less *effusion* of adhesive matter into the joints and surrounding tissues. This adhesive effusion, or actual adhesions of the tissues, may cause a sensation of *crepitus* on motion, which may easily be mistaken for *fracture.* But close observation will generally enable the practiced ear of the surgeon to distinguish this from the crepitus of loose bone.

The CONSEQUENCES of unreduced luxations, and the *changes* that may supervene in the bone and contiguous parts, are worthy of attention. Sphacelus, as a termination of the inflammation excited, may come on after the reduction as well as for want of it. Its danger to the limb or life of the patient is obvious. But when this danger is escaped or warded off, the principle of adaptation, so observable throughout nature, comes into play. The displaced bone not unfrequently forms a new socket, so that a considerable degree of motion, with the requisite pressure upon it, is regained. The particular result will depend in a great measure upon the length of time since the accident, as well as upon the peculiar structure of the parts where the head is lodged. If it is among muscular matter, the cartilage remains entire and new cartilaginous deposits take place around it; connecting firmly with the neighboring parts. Within this new formation the head of the bone freely moves. If, however, the dislocated head be in contact with another bone—or there is but a thin muscle between them, which is soon absorbed in consequence of the pressure bringing the bony surface in contact—a remarkable change takes place in the dislocated head. The articular cartilage and the rounded end of the bone are both absorbed, the latter being flattened or hollowed out so as to adapt itself to the contiguous surface, which is also sometimes modified to receive it. Ossific deposits frequently take place around the cavity, forming a deep cup, confining the bone in its new place and allowing it considerable freedom of motion. The muscles become diminished in length in proportion as the limb is shortened.

The CAUSE of dislocation occurring is generally a force exerted on the bone when it is in an oblique direction with respect to its articulating connection, and when the muscles are relaxed and unprepared for resistance. In such circumstances very slight force may be sufficient; though to produce the same result, an immensely greater force would be necessary, were the individual on his guard. When this is the case, and the injury has been brought about in spite of resistance, "by main force," extensive laceration as well as luxation occurs. On the contrary, little if any injury is done to the surrounding parts, when the bone has *slipped*, as it were accidentally, out of its place. Such a dislocation may occur from paralysis of one set of muscles, the other retaining their force; or the spasmodic action of the muscles upon either side, may easily effect it, when the antagonistic ones, with the ligaments of the joints, are in a state of relaxation. Ulceration may also be the cause, by detaching the ligaments, as in the Hip Disease.

Dislocations may be connected with *fracture*. This is almost invariably the case when the ankle joint is the one concerned, the fibula rarely escaping fracture. The olecranon process of the ulna is also not unfrequently torn off, when that bone is "put out of joint." Luxations of the head of the humerus are often accompanied with fractures of the scapula. Dislocation of the spine and of the ribs must always, in my opinion, be attended with fracture.

"Compound dislocation" is technically used to imply a dislocation accompanied with laceration of the surface and capsular ligaments, exposing the displaced end of the bone. In such a case, there is generally more or less hæmorrhage, with an immediate escape of the synovial fluid. These dislocations are dangerous. Extensive inflammation and suppuration are likely to ensue. The cartilages very soon inflame, suppurate and pass off. The denuded extremity of the bone, even when replaced, only adheres at the joint, and anchylosis is the least unfavorable result. Unless great care is taken immediately after such an accident, to prevent the occurrence of much inflammation, and after resolution to effect early adhesions of the soft parts lacerated, serious evil may be apprehended.

Some joints are more *liable* to compound dislocation than others. The ankle, the wrist and the elbow, are perhaps the joints most frequently subject to this form of accident. It rarely happens with the knee.

Partial Dislocations may occur. The tibia, for example, may be thrown forward on the metatarsus, while partially retaining its proper basis. One bone of the elbow may easily be thrown out of place, while the other remains in position.

Liability to dislocations varies in different parts, and also with the age of the individual. Those joints which have the most extensive and varied movements, are the most exposed to this accident—the shoulder more than any other. Very old and very young persons are less liable than others; the former in consequence of the greater fragility of their bones suffering fracture; while in the latter, imperfect ossification allows the separation of their epiphyses from the body of the bones.

The diagnosis between a *fracture* near a joint and a dislocation of that joint, is sometimes very difficult. In dislocation, the bone is not only incapable of its proper motions in the joint, but is generally immovable beyond a certain point or in certain directions, even by the efforts of others. In the case of fracture, on the contrary, there is a loss of control in the direction of motion; but the muscles still act and even move it more freely, while the limb, if it be a limb concerned, can be easily moved by the surgeon. If proper extension and adjustment be made, a *limb* will remain extended, when it has been only dislocated; while in fracture, if it be not immediately secured, it will be drawn back into its former position. In the latter case, moreover, crepitus can generally be heard over the broken ends of bone; whereas no such phenomenon is to be expected in dislocation; nor anything that can be mistaken for it, unless from adhesion or effusion, as already mentioned.

The principal DIFFICULTY the surgeon has to encounter in reduction, is the resistance of the contracted muscles; and this will generally be the greater in proportion to the length of time that has elapsed since the accident occurred. The muscles have a great contractile force, independent of volition. This is true even of the otherwise voluntary muscles. When a muscle is divided, its separate parts both contract: so in partial paralysis, or loss of voluntary control of motion, the muscle still contracts, and permanently draws the part with which it is connected in a given direction. This sort of contraction will continue an indefinite length of time; for it is not followed by fatigue, as is the case with contraction excited by volition. Moreover, when a muscle has been long thus involuntarily contracted, it becomes incapable of being again extended: the new position is then the natural one; its contraction has become an actual shortening. Thus, when a bone is dislocated, the contraction of a muscle removes it far from the joint, and there it is retained. After it has been long thus re-located, no power short of that which will rupture the muscle is sufficient to replace the bone in its original position. In reduction, then, the surgeon has to overcome this increasing *contraction* or shortening of the muscles. This is generally effected without much force, if *extension* be made soon after the accident (which should always be done, even when complete reduction is not at once effected.) If only a few days are allowed to elapse, great difficulty will attend the operation.

An additional difficulty, in cases of long standing, results from *adhesions* of the surrounding parts, by which reduction is often rendered impossible, independently of the contraction of the muscles.

Or, as a third obstacle to reduction, the *socket* from which the bone has been displaced, is more or less occupied with effused matter, so that if sufficient extension can be effected, and the head of the bone brought back to its original position, it can not re-enter its socket. The matter deposited may even have been ossific, and the original cavity be entirely filled up with solid and resisting substance.

Or, again, a *new socket* may have been formed for the head of the bone, as well as corresponding adhesions or cartilaginous connections. In this way, the head of the bone may be so completely fitted to its new position, that it would be equivalent to a fresh dislocation to remove it, even if you were sure of getting it back to and *into* its original place.

Force alone can not, then, be depended on in the reduction of dislocations. Constitutional as well as local means must be resorted to—*physiological*, as well as *mechanical*, principles must be brought to our aid—especially when any considerable time has elapsed since the accident occurred. In nearly all cases, however, physiological as well as anatomical considerations are involved, and more or less constitutional management is requisite. The surgeon must take into account the natural action of the large muscles, and the direction in which their contraction has a tendency to draw the limb or bone. This, in ordinary cases, and for a long time, is the principal source of difficulty. Every surgeon, therefore, should be well acquainted with the anatomy of the parts, should know individually every considerable muscle connected with the joint, and how much extending and counter-extending force is necessary to overcome its resistance.

The constitutional means necessary, in most cases, to be employed, are such as will immediately bring about a general relaxation of the muscular system. These means are required not only to overcome, what may be called the instinctive resistance of the voluntary muscles, but any spasmodic action that may occur. It is for this reason that blood-letting and antimonial nauseants are generally recommended. But, inasmuch as we have abundant resources, which will produce the desired effect as certainly, and much more safely for the patient, we are not under the necessity of resorting to these objectionable means. The warm bath is a valuable auxiliary; but nauseants, after all, must be chiefly depended on. Antimonial nauseants, however, always objectionable, are here particularly dangerous; for they must be given to a sufficient extent to produce complete relaxation, which can not be done without excessive prostration and danger of irritation, or even inflammation of the stomach and bowels. In the much decried and much *abused* article, *Lobelia*, we have a nauseant far superior to tartarized Antimony. Not only are its direct effects on the system far better for our purpose, but the most extended experience has proved that it is free from all danger of irritation or too long continued a prostration.

Let the patient, then, be subjected to a simple warm bath, or to a vapor bath, till free perspiration is excited. Give him also the *Lobelia*, either in the form of infusion or of the acetous tincture—give it in small and frequently repeated doses, increasing the quantity until a very large amount has been taken. If actual vomiting is caused, you can lessen the quantity or increase the interval between the doses, but should not discontinue the operation until the most complete relaxation is effected. This may be carried indeed to such a point—and with perfect safety, too—that the patient's limbs and whole voluntary muscular system will be as flaccid, or nearly as flaccid, as those of a recent corpse. Yet from these and other "alarming symptoms," the subject of them will invariably and spontaneously recover in the course of a few hours. *Tobacco* has been recommended by some surgeons to produce this relaxation; but it is dangerous as well as unnecessary.

When the proper relaxation has been brought about by these internal and external means, the *mechanical operation* of REDUCTION should be at once effected. This consists mainly in what is called extension and counter-extension. The direct extension is usually made by the surgeon's own hand and muscular force. The counter-extension, or fixing of the body so as not to yield to the extending force, may be intrusted to assistants or to properly arranged machinery.

The *extending force* should never be suddenly applied. Begin gently, and gradually increase the strain, till the muscles are wearied or give way. Very great resistance may thus be overcome by a comparative slight force long continued, and no violence or permanent injury done; whereas the requisite amount of force, if applied all at once, would be sufficient to tear the muscles asunder.

The *counter-extension* requires considerable care, so that when extension is made, the socket into which reduction is to be effected, will remain fixed and unyielding. The requisite force for this purpose is, in many instances, better supplied by mechanical means, the resistance of which is more firm and steady, and more to be depended upon than any amount of manual force. The requisite machinery, and the best, when it does not require the loss of too much time to procure it, consists of a set of *pulleys* fixed at some point in the direct line of the intended extension.

The *limb* should if possible be kept in such a position as will of itself produce relaxation of the stronger of the opposing muscles. As a general rule it should be partially flexed.

In some instances the extension should be made directly upon the dislocated bone. In other cases, it is better to apply your force to the bone next beyond, as to the forearm in dislocations of the shoulder joint. In dislocation of the hip, on the contrary, the extending bandages should be applied above the knee, as their object requires the limb to be bent.

The state of the patient's MIND, independent of conscious volition, exerts much influence over the muscular system, and is a consideration of great practical importance. Resistance to external force is an instinctive or reflex and involuntary act. The adroit surgeon will contrive to *divert* the patient's *attention* as much as possible from the operation. He may, for example, have some piece of good or bad news, some surprising intelligence communicated, or some striking "accident" purposely brought about, at the desirable point of time. The arrival of some long absent friend may be announced, or some article let fall with alarming violence. I have immediately succeeded, in otherwise difficult cases, by having an assistant or accomplice, to attract the patient's attention by dashing his hand suddenly through several panes of glass, just at the favorable moment, when I gave the signal and everything was ready for effecting the object—except the patient's mind.

The SUCCESS of your efforts can generally be known by the limb having suddenly regained its original *shape* and capacity for *motion*. The entry of the head of the bone into its proper socket can, besides, be commonly both felt and heard; it "snaps" like a lock when the key is turned. When pulleys are used, however, or when the muscles are very much relaxed, this snapping of the bone into the socket will not be noticed.

After the dislocation has been reduced, the limb should be kept in its original position by bandages and, in some cases, splints also; otherwise a very slight force may throw it out of place again. All the TREATMENT generally necessary, after this, is to keep the bandages over the joint constantly wet with cold water, and attend to such constitutional symptoms as may arise. As the patient is bound to keep quiet for awhile, his diet should be regulated accordingly.

If INFLAMMATION should arise, the same means must be resorted to as are required in other cases of acute inflammation. Suppuration about the joint must be carefully guarded against. Hence, as a general rule, emollients are to be avoided. Resolution is here the only safe termination of inflammation. If you would therefore escape ulceration and destruction of the joint, do not allow the lately dislocated part to be moved for some time to come. Too long inaction may indeed occasion some stiffness of the joint; but the danger from this source is little or none compared with the other; and the inconvenience and anxiety of friends may be easily overcome by gradually attempting motion, when the proper time for it has arrived.

As to the exact TIME, after which an attempt should *not* be made to reduce a dislocated bone, *no positive rule* can be laid down. In some instances limbs may be put in place months after the accident. Reduction has been in some rare cases effected even after years of neglect or unsuccessful effort. But as a *general* rule, the lapse of a few weeks will render the success very doubtful. Reduction, in such cases, even when effected, is at the risk of serious injury to the patient. Sir Astley Cooper fixes three months for the shoulder, and eight weeks for the hips, as the periods, after which it will be *too late* to operate—unless in persons of very relaxed fiber or advanced age. But such rules are subject to many exceptions, however great the experience of the person who makes them. They are at best only probabilities and rules for prognosis. In many instances a much shorter period than he mentions will make it too late, while in other cases, besides those he excepts, you may succeed after a much longer interval. The degree of approximation toward a new and useful joint will often be a better criterion than the amount of time elapsed.

Inasmuch as COMPOUND DISLOCATIONS are of much more serious importance than simple ones, the practitioner should well understand the necessity for medical treatment in these cases, aside from the mere mechanical operation of reduction. According to the definition before given, these cases imply that the surrounding soft parts are to a greater or less extent lacerated, with some portions of the dislocated surfaces exposed. The first object, therefore, will be to arrest hæmorrhage and remove all foreign substances from the wound. After that the bone should be restored to its natural place and the wound closed as soon as possible. Special care should be taken in this kind of wounds to promote healing by the first intention, bringing the parietes of the wound as nearly as possible into their original position, and keeping them there by bandages and compresses. Sutures should never be used.

Some authors recommend us to wrap the wound in lint dipped in blood. But if the bandages applied be first dipped in *cold water*, and afterward kept wetted, this singular recommendation will be quite unnecessary—a plan, by the way, which, besides being so troublesome, is frequently found rather to aggravate or promote than to retard inflammation.

Let the limb be placed in whatever position is easiest, and apply moderate *compression*. The best means for doing this is the Gum Shellac splint (described, pages 19 and 190.) This should be adjusted to the whole limb—leaving, however, an open space at the wound, so that it can be properly dressed—and fixed on by the roller. A more equable pressure can thus be brought to bear than by any other means.

The WOUND itself should be kept constantly covered with lint, over which are laid cloths wet in cold water. It is often well to add spirits to the water. I have found a good and convenient cooling lotion to be one made of equal parts of Whisky and water saturated with Salt, with the addition, sometimes, of about one-sixth part of the Tincture of Camphor. If the dislocation be properly reduced, and the lacerated parts adjusted, this application will almost always bring about adhesion, without suppuration, or even extensive inflammation.

If the BONE be *injured* as well as dislocated, and there be any broken portions in the wound, these must be scrupulously removed, as, if left there, they will become a source of irritation, and prevent healing.

POULTICES, as was before remarked, should be avoided, especially in the earlier stage of treatment, as they tend to promote suppuration and counteract the object of speedy adhesion. Yet, when severe inflammation has set in, notwithstanding the precautions mentioned, and suppuration is inevitable, you should resort to emollients, to bring it about as speedily as possible.

Among other advantages, this measure will then help to ward off the danger of tetanus, which is very apt to occur from severe inflammation about a joint.

If ABSCESSES should form, they should be *opened* as speedily as possible, and no pus be allowed to accumulate about the joint, as it might occasion serious injury, local as well as constitutional.

To allay CONSTITUTIONAL IRRITATION, should much arise, anodynes may be given. The symptomatic fever, as it is called, attending such cases, is often very great. Diaphoretics, and even emetics, with an occasional cathartic, are therefore very serviceable; but depleting medication should, nevertheless, be cautiously used. The patient should have nutritious diet, though only such as is unstimulating. It may even be necessary to give tonics, and stimulating tonics, when the discharge of large quantities of pus occasions debility.

Attention to the cutaneous function is of great importance. The Alkaline Bath (see Introduction) should be used every two or three days, and the surface freely sponged with cold water two or three times a day—guarding, however, against a chill by not applying the cold over too much of the body at the same time, or to any part, before reaction is established by the drying, friction and covering of the part last bathed—(see Introduction, page 7.)

Notwithstanding that laceration about the joints, in connection with luxation, is generally looked upon as requiring AMPUTATION, if such a course of management as above directed be resorted to, and proper care and attention given, the limb may generally be saved. Amputation ought to be confined to such lacerations only as result from being run over by heavy wheels. getting entangled in machinery, and the like.

The surgeon's attention should not be confined to the palpable injury. He should make strict examination into all other parts of the system. Severe bruises, and even fractures, of other less sensitive parts may have occurred, and the patient not be aware of it, his attention being engrossed by the manifest injury.

I will take this opportunity of mentioning the "*Sweet plan of Reduction*"—which, although originating with a man ignorant of anatomy, is not on that account necessarily to be despised by those who are *otherwise* better informed. There may have been much "humbug" in the practice of professional bone-setters; but the way to put down that and all other humbugs, is to ascertain and publish, so that all may distinguish, what little truth and good may be mixed up with trickery. Unadulterated humbug is seldom long successful.

The "Sweet plan," then, consists in first extending the limb, so as to draw it as much further *out of place* as possible, and then, while the patient's attention is adroitly directed to something else, make a sudden *rotary motion*, in the course of which the limb is very apt to slip into its place—though the operator himself may not even know exactly where that place is. This contrivance very frequently succeeds, when more "scientific" methods have failed; and the end is of more importance than the means. The plan, however, may be defended on physiological as well as mechanical principles. Whatever may be thought of it, I am willing to acknowledge that I have availed myself of it. A few years after I had learned "the trick," I was sent for in the night to an Irishman who had fallen through a scuttle on a pile of barrels in the slaughter house of E. Wilson, on Deer Creek, in this city. I found him suffering much pain from a forward dislocation of the humerus. I immediately pulled the arm as far back and up as I could, causing the head of the bone to protrude more than before under the clavicle, and then with very slight extension, and a violent rotary movement, it snapped into its cavity. In another case, the plan succeeded equally well, where the femur had been dislocated upward upon the dorsum of the ilium, and remained in that position for fourteen days before I saw it. The patient was a daughter of Mr. Williams, of Covington. Professor Morrow has likewise successfully applied this rotary principle—in one case, when the limb had been left unreduced for a much longer time.

LECTURE XLIV.

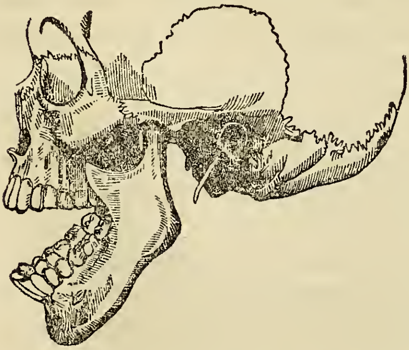
PARTICULAR DISLOCATIONS—OF THE JAW, CLAVICLE, RIBS, ETC.

I HAVE dwelt so fully in the last lecture on the general management of dislocations, that in treating of those of particular joints, I shall, for the most part, only speak of the peculiar attention they may require in a mechanical point of view. Let me request you, therefore, to bear in mind, all through, what has been already said respecting *constitutional measures*, as well as *local treatment*, so far as it is *medicinal.* I would also again impress upon your minds, the absolute necessity of accurate *anatomical knowledge.* It is impossible to teach surgery and anatomy in the same course of lectures, or to teach the former without presuming that the latter is already sufficiently known. In but few cases shall I be able to step aside, to recall to your mind some facts which ought never to be absent.

DISLOCATION OF THE JAW.

This alarming, but not very serious, and even sometimes rather ludicrous, accident, may occur *spontaneously*, while the person is in the act of yawning, or very easily from a *blow* on the chin when the mouth is wide *open.* This you will readily see by recalling to mind the shape and action of the joint.

FIG. 28.

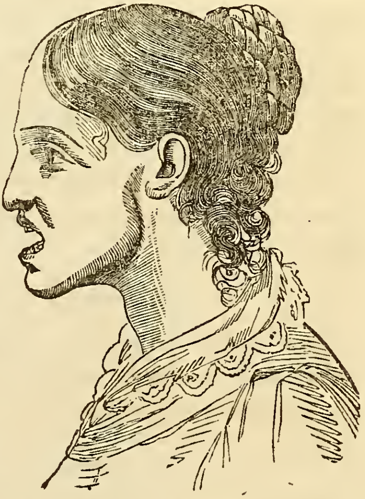


In front of the glenoid cavities, into which the condyles of the lower jaw are articulated, there is an eminence of the temporal bone, which in fact forms part of the joint. It is covered with cartilage and synovial membrane, and when the mouth is open the condyle slips forward and rests upon it. When the chin is stretched forward as well as downward, the jaw rises to the summit and is on the verge of dislocation. If in this position it slips further forward, the condyle sinks into the depression anterior to the prominence described, and can not spontaneously return, (as is clearly shown in Fig. 28).

A further reason for the facility of this dislocation is found in the great variety of motion permitted by the joint. Mastication requires the lower jaw to be moved forward and backward, and traversely, in addition to upward and downward, as in opening and shutting the mouth. The same muscles assist in several of these movements. The platysma myoides, digastricus and others of the neck, pull it downward. The masseter acts both in the forward, backward and upward motion. The pterygoid muscles impart the grinding movement, and concur in the protrusion forward.

The SYMPTOMS (Fig 29), are very obvious. The patient is in a *continuous yawn*—only a little more so, the teeth of the lower jaw projecting beyond the upper. A very little motion is still possible in either direction, but no effort of the patient or mere pressure on the chin, can shut the mouth. The posterior part of the cheek is sensibly *protuberant* from pressure of the coronoid process on the bucinator muscles, while behind it, just before and below the opening into the ear, there is a sensible depression. The *saliva* is running out of the mouth, there being an increased secretion from irritation of the glands. The *pain* is sometimes very severe and alarming to the patient and friends, but the accident is rarely, if ever, dangerous.

FIG. 29.



The CAUSES, besides those already noticed, may be any spasmodic action when the mouth is open, or the attempt to bite something too large. It has occurred during the attempt to extract teeth. In the cases I have met with, prolonged yawning has been the cause.

The whole TREATMENT consists in doing for the patient what he can not do for himself—"shutting his mouth" for him!

The slightest mechanical skill, with any knowledge of the relative position of the parts concerned, will suggest how this is to be effected. The only thing to be feared if you proceed to do this in the readiest way, by manual means, is, that the patient will bite your fingers off for your pains. When the dislocated condyle is raised over the obstacle, it slips back and the mouth closes with great violence.

A very simple and effectual mode of accomplishing your object, is to place two large *corks* or pieces of soft wood, instead of your thumbs, between the teeth, as far back as possible. Then using these as *fulcrums*, having previously had the head fixed or held by assistants, seize the jaw and press the *chin* steadily *upward* and backward. I have several times succeeded by a sudden force, but this is not necessary nor desirable.

Other treatment is unimportant. As the accident is liable to recur, bandages or broad ribbons should be tied on, so as to keep the jaw in its place, and for awhile to allow of as little motion as possible.

When only ONE SIDE of the jaw is dislocated—as happens by violence downward and laterally when the mouth is open—there is a similar inability to shut the mouth, but it is not kept so widely open; and the lower incisor teeth not only project beyond the upper, but are no longer in a line or parallel with them. The reduction in this case is effected on the same principle of leverage with the jaw itself as in the former: place a cork as far back as possible and raise the chin.

PARTIAL or SUB-LUXATION often occurs, the bone slipping from its inter-articular cartilage. It falls back spontaneously with a crack.

DISLOCATION OF THE CLAVICLE.

The collar bone may be separated from its attachments with those of the breast or shoulder, in the former case being pushed forward or backward, and in the latter almost always upward.

At its Sternal Extremity.

The FORWARD protrusion of the end of the clavicle that connects with the sternum is very distinct, the dislocated end rising on the upper part of that bone (see Fig. 30.) By throwing the shoulder back this elevation disappears, but returns again on releasing the shoulder: it descends when the scapular end is raised, and rises toward the neck when that end is depressed.

Fig. 30.

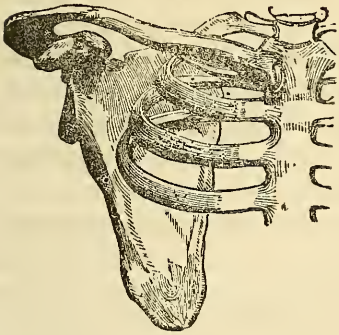
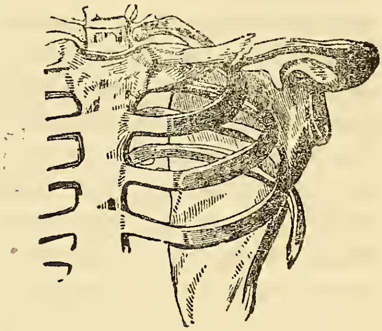


Fig. 31.*



Moving the shoulder, however, gives the patient much pain, and it is with considerable difficulty that he can move it at all. The shoulder looks somewhat flattened, especially if the patient be thin in flesh—in which case there will be no difficulty in recognizing the nature of the injury at first view. But in very fleshy individuals the *diagnosis* is sometimes attended with considerable uncertainty. The patient complains little except when he attempts to move the shoulder.

The CAUSE of this accident is generally some force applied to the shoulder in such a way as to push the clavicle upward and backward, so as to press the other *end* of the clavicle *against* the sternum, but with a tendency to slip forward and *upon* it. It may happen from a fall upon the elbow, when projected from the side and forward.

This dislocation may be but PARTIAL. Some portion of the capsular ligament may not have been ruptured, and the bone thus be prevented from rising entirely above its proper articulating position. Generally, however, when the anterior part of the ligament gives way, the rest also yields, and the dislocation is complete.

The REDUCTION is very simple. If you pull the shoulder backward, the clavicle is drawn down to a level with the sternum, the head falling necessarily into its proper place. The shoulder should be drawn outward also as far as practicable while some downward force is exerted on the clavicle. The arm is to be

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[*] Fig. 31 shows, in contrast, a common form of the *fractured* clavicle.

supported to prevent its weight affecting the direction of the clavicle.

The *keeping* of the bone *in place* is a matter requiring more consideration than the *getting* of it there. For this purpose a particular contrivance is resorted to called the CLAVICLE BANDAGE, being in effect a sort of "stays" or corsets, buckled round the body and round the shoulders, with a pad or cushion in each axilla. [For illustration and mode of applying, see under *Fracture* of the clavicle.] The arm should be carefully adjusted in a sling, extending from the elbow to the wrist.

[The risk of *deformity* will be noticed after describing the dislocation at the shoulder.]

At the Scapular Extremity.

The clavicle is stated to be much more frequently separated from the SHOULDER than from the sternum, though much greater force would seem to be necessary to produce the result. The CAUSE is almost always a fall upon the shoulder in such a way that the scapula is pressed inward upon the ribs, and the clavicle separated upward. A very few cases have been recorded of the clavicle getting under the acromion.

SYMPTOMS.—As the scapula is partly supported by the clavicle, when that support is withdrawn it naturally descends. Hence the *shoulder* on the dislocated side is found to be *depressed* when compared with the other, and also contracted or *drawn inward* toward the sternum. This can be accurately ascertained by *measurement* from the center of the sternum to the point of the shoulder. On placing the finger upon the spine of the scapula and tracing it along toward the acromion process, the finger is stopped by the *projection* of the clavicle. If the shoulders are drawn back, the point of the clavicle sinks into its proper place, but, as in the former case, the deformity reappears on letting go the shoulder. The pressure of the dislocated end of the bone against the integuments occasions a good deal of pain. This as well as the rupture of the ligaments, which is necessarily considerable, soon brings on inflammation and tumefaction.

In REDUCING, the surgeon stands behind the patient, placing his knee between the shoulders, and drawing them both back until the clavicle sinks into its natural position. Cushions are then placed in each axilla, so as to raise the scapula and keep it from the side; they also serve to protect the arm-pits from irritation by the bandage. The Clavicle Bandage is then applied so as to press upon the clavicle, the scapula and the upper part of the humerus. The clavicle and scapula are thus effectually kept in their proper relative positions. The arm should be not only supported in a sling, as in the former case, but so secured as to keep it all the time pressing slightly upward and backward.

SLIGHT DEFORMITY almost always results from these accidents, notwithstanding the utmost skill and care of the surgeon. The adjustment and reunion can very rarely be exact; and the situation of the parts renders the defect manifest. Hence surgeons are always advised to inform the patient and his friends of the great liability, and even probability, of some change from the natural form of the part—though no serious impediment to motion need be apprehended. I have, however, succeeded in two cases of clavicular accident in so adjusting the parts that not the least deformity could be afterward discovered.

One was a case of simple dislocation, the other of compound fracture, where a portion of the bone projected for an inch through the skin. The patient, in the latter case, was a large athletic man, still residing in this city. The accident happened in the spring of 1844. The bone was adjusted and dressed by myself, with the assistance of a student, in the manner hereafter described. In the course of a few weeks, the patient went about his business, which was that of a whip-sawyer, without the least difficulty. I have since examined the case several times, and it is now impossible to see on which side the accident occurred, except from a slight scar in the skin.

The other case I alluded to was a dislocation of the sternal extremity of the bone. The subject of it was a young man—the cause of it a fall from his horse. The deformity before the reduction was very great. It is now nearly three years since the occurrence, and no trace of it can be seen or felt.

I attribute the remarkably successful results in these cases to some peculiarities in the applications made. In the former instance, a very thick and firm piece of leather was fitted to the part and spread with adhesive plaster. Pretty strong compression was applied over this, so fixing the muscles and integuments as to render them incapable of motion. No disturbance of the parts was permitted, nor were the compresses and bandages removed for eight or ten days. In the latter case the gum shellac cloth was fitted and spread over the part and shoulder, by which everything was perfectly secured.

Dislocations of the Ribs and Vertebræ

Are sometimes spoken of, but these are accidents that can scarcely happen without fracture. "Breaking the neck" or "breaking the back," then, must be really *breaking*, as well as separating the *bones*, of the spinal column. When such a separation really happens, there is seldom any use for a surgeon—unless to tell exactly what *has been* done. Both these subjects, as also the rare occurrence of partial

Dislocation of the Pelvic Bones,

Or separation at their symphyses—will be taken up in connection with Fracture.

LECTURE XLV.

PARTICULAR DISLOCATIONS CONTINUED—THOSE OF THE HEAD OF THE HUMERUS, OR OF THE HUMERUS FROM THE SCAPULA.

The Shoulder Joint,

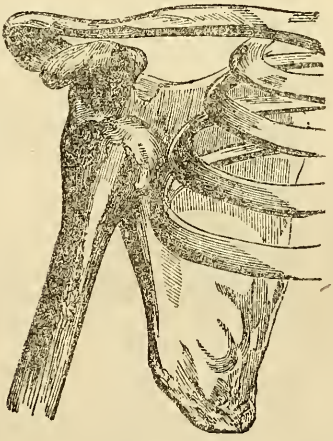
From its exposed situation, the great range and variety of motion which it allows of, and the consequent shallowness of the socket, is more liable to luxation than any other—perhaps than all others in the body. There are to be clearly distinguished at least *three* ways or *directions* in which the accident may be brought about. What is sometimes called the *fourth*, is only a partial dislocation.

The head of the humerus on escaping from the glenoid cavity, may be pushed or pulled downward, forward or backward: In the first variety, the head of the bone is found in the *axilla*, or resting under the lower side of the inferior costa of the scapula. In the second, it is thrown *forward* upon the pectoral muscles, below the middle of the clavicle, between the coracoid process and the sternum. In the third case, the head is thrown *up* to the higher and *back* part of the inferior costa, or dorsum of the scapula, where the large protuberance can be distinctly felt and seen. "The fourth" or the *partial* dislocation *upward*, is always attended with a rupture of the capsular ligaments, the head of the bone resting against the outer side of the coracoid process of the scapula. I can not conceive how this should ever happen without a fracture of the acromion process.

Downward Luxation—into the Axilla.

Among the SYMPTOMS, in this case—besides the obvious one of the large hard tumor-like protuberance, which can be distinctly felt in the arm-pit when the arm is raised—there is a corresponding *hollow* below the acromion process, in consequence of the passing of the head of the humerus out of the glenoid cavity—(see Fig. 32). The natural form of the shoulder is changed, the muscles being flattened, and the arm seemingly elongated. The elbow can not without great pain be brought to the patient's side, in consequence of pressure of the head of the bone upon the axillary nerves; the patient is inclined to separate his arm from the body and support it with the other hand.

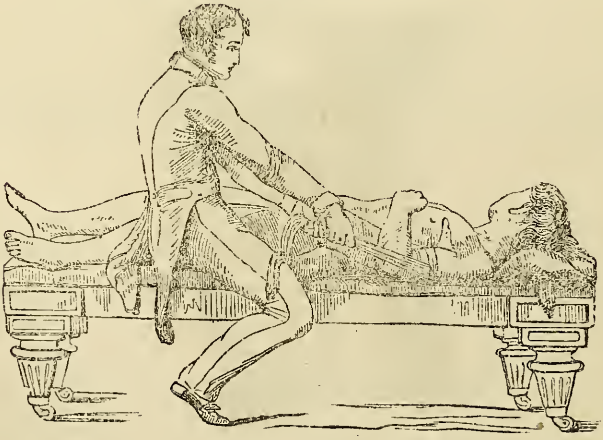
Fig. 32.



When some time has elapsed, and there is inflammation with much swelling, the bone can not be readily felt; and to bring its head low enough down for this purpose, the arm should be raised as high as possible. The patient himself can move his arm but little; and even when others raise it for him, the movement is accomplished with difficulty and gives much pain. The patient can not *rotate* his arm, nor can he raise it to his head, though he can move it directly backward and forward with considerable ease. Some patients, however, will have much more motion than others, the spasmodic force of the muscles differing much in different individuals. If the dislocation is of long standing, a *crepitus* can be heard on moving the arm. This results from the effusion of lymph into the joint, and synovial fluid into the cellular tissue; and can be readily distinguished from the *grating* sound of fracture—which latter continues, while this *crackling* ceases, if the movement is kept up for any length of time.

Among the most definite symptoms should be noticed the *change of axis*. A central line, going lengthwise through the arm, would strike the body lower than in the natural position. In some cases the *fingers* are very much *benumbed* in consequence of the pressure of the bone upon the axillary plexus. If the arm continues out of place, the compression of the nerves and bloodvessels may occasion complete paralysis and atrophy of the limb.

FIG. 33.



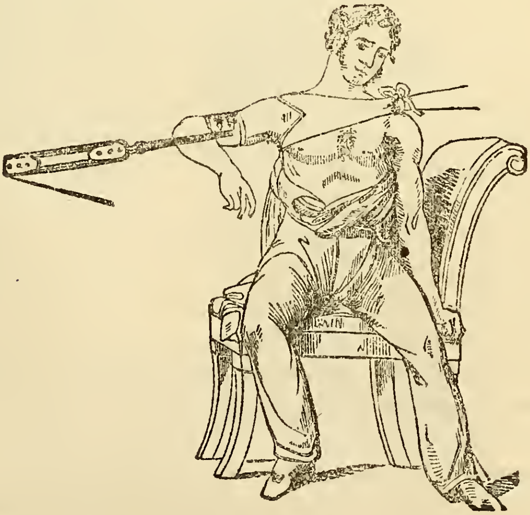
All the symptoms I have stated or alluded to, will not often be necessary to determine the nature of the accident. When, however, much time has been lost, any or all of these signs may be so obscured as to render diagnosis difficult; and it will often be necessary to first reduce the tumefaction before offering a positive opinion. In very young or fleshy persons, the exact state of the case may not be easily ascertained, even immediately after the displacement has occurred.

In REDUCING axillary luxations, the plan generally adopted by the best surgeons of the present day is this—[illustrated by the accompanying cut, Fig. 33]: the patient is placed in a recumbent position upon the floor or a couch; and the surgeon sitting before him puts his unshod *heel* on the head of the bone in the axilla, and presses it upward, while he pulls steadily and firmly on the arm, until the head of the bone slips into its place. By this rough-looking management he is generally able to effect his object without assistance. If not, more force may be applied to the arm by means of bandages and straps, which may be lengthened to any extent and placed in the hands of assistants standing behind the principal operator—he being thus able to direct or deflect the extension, while his heel is still kept firmly pressed against the head of the bone.

These means are commonly sufficient, and may always be tried in the first instance. If they fail, resort must be had to others, by which still

GREATER FORCE can be brought to bear. Place the patient in a chair (as represented in Fig. 34) and secure the scapula by *counter-extending bandages*, so applied as to let the arm pass

FIG. 34.



through them. These bandages round the shoulder may be made of any strap or girth, buckled or sewed on. They are to be fixed behind and somewhat above the patient. The counter-extending apparatus *may* be fixed round the body under the arms, though this does not secure the scapula as when it is closely fixed about the affected shoulder itself.

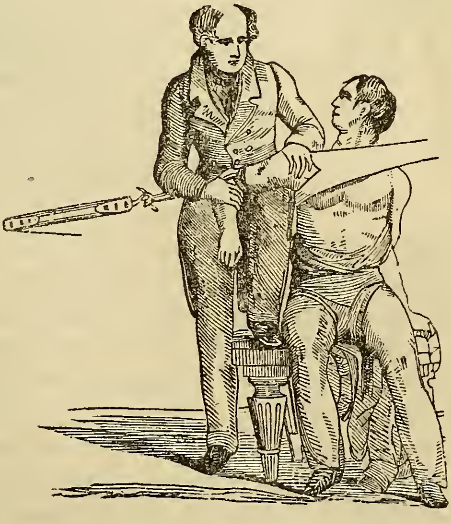
For the extension, a wetted *roller* should be placed round the arm just above the elbow, so that it can not slip, with straps or slips of cloth attached. The arm is then to be raised to a right angle with the body, or it would be still better to raise the elbow above the horizontal line with the shoulder, so that the deltoid and spinatus muscles may be more completely relaxed. With the arm in this position, let two or more assistants make extension upon it, a sufficient force being at the same time exerted in the opposite direction upon the scapula bandage. The force must be gradually applied and steadily kept up; for if any jerking occur, alternately relaxing and extending the parts, nothing will be gained, but much injury inflicted. When the strain has been kept up for a short time, the surgeon having his foot resting on the patient's chair or some other convenient support, pushes his *knee* into the *axilla* (see Fig. 35) and presses up the head of the bone, while at the same time he presses down with one hand on the acromion. The reduction may sometimes be much facilitated by making slight rotation upon the arm. In this, as in other cases, it should be remembered that much depends upon the state of the patient's mind. If, while extension is being made, his attention can be diverted from the operation, though but for a moment, much trouble and suffering may be saved.

In cases of very long standing, more force, or a longer continuance of the strain, may be required than could be safely trusted to assistants. The object, it must be borne in mind, is to weary out the contracted muscles; and this would be defeated if the assistants themselves should become weary and let go. Machinery can therefore be used with much advantage [as was represented in both the figures last given, Nos. 33 and 34.]

When *pulleys* are made use of, as they may be, both for extension and counter-extension, they must be securely fixed to rings or staples; and the surgeon should begin the extension himself, giving the pulley into the hand of an assistant as soon as he thinks it time to direct the head of the bone.

In RECENT CASES, the arm may frequently be restored to its place *without* any *extension*, or any considerable exertion of force. Seat the patient who has just met with the accident in a chair; spread out the dislocated arm as far as possible from the side; insert your knee into the axilla (in the same manner as represented in Fig. 35, where, however, the pulley and counter-extending bandage are also represented, as they may be used, if necessary), your foot being fixed on a chair for the purpose, and the heel raised, so as to press the knee upward; grasp the humerus just above the elbow with your hand, pressing down at the same time upon the shoulder. If the little knowledge requisite for this simple procedure were generally diffused, a great deal of unnecessary suffering would be prevented, and the usefulness of many an arm restored which is now lost to society. Why should not all intelligent or educated men be surgeons enough for this and other simple operations, that *become difficult* only because people have to wait till professional skill can be called in?

Fig. 35.

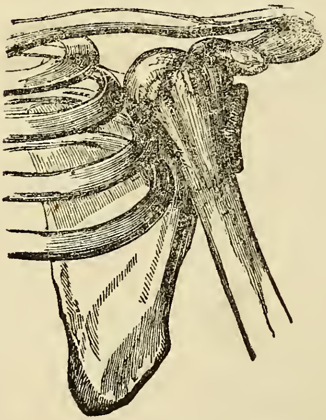


I once succeeded in reducing an arm by this *unassisted means* which had remained some time out of place and resisted other attempts. The parts had become extremely tender, and the contraction and resistance of the muscles were also very great. The patient was a drunkard, though sober at the time; and—as he obstinately refused to take *other* medicines for the purpose of bringing about relaxation—I gave him a pint of Whisky at once, and soon had him "dead drunk."* In that state, I proceeded to the reduction, and soon effected it, without the least difficulty, or the patient giving any sign of pain. On visiting him the next day, I succeeded in a still better operation—cured him of a worse disease: I persuaded him "to sign the pledge," which he has faithfully kept.

FORWARD LUXATION—UNDER THE CLAVICLE.

The SYMPTOMS of this accident are very distinct. The *head* of the humerus can be plainly felt, and generally seen, upon the pectoral muscle, just below the clavicle. The point of the *acromion process* is very distinct, the hollow beneath it being considerable. The coracoid process of the scapula is on the outside of the displaced head—which can be observed to move when the arm is rotated. The *elbow* is thrown further back than in the former case, and still separated from the side. The *arm* is also much shortened, with its axis pointing inward toward the middle of the clavicle. There is great difficulty in moving the arm in any direction, in consequence of the resistance of the muscles, and by the obstruction of the clavicle above, and the coracoid process of the scapula behind. The *pain*, however, is not so great as when the dislocation is in the axilla, pressing upon the nerves.

Fig. 36.



The CAUSE is usually a fall upon the elbow when it is thrown behind the central line of the body, so that the force comes from behind and inward.

The REDUCTION can generally be effected in a manner similar to that of the former cases. The operator's heel, however (if it is made use of), must here be brought further forward, while the patient's arm is to be drawn obliquely downward and slightly backward. But, if much delay has occurred, the case may require steady and continued extension by assistants or suitable mechanical means.

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* This was before the day of Ether and Chloroform, which may now be used in such a case with many advantages.

For the *extension* and counter-extension, such bandages and apparatus may be directed as before described. The arm, however must be so raised as to relax the biceps muscle; and the force applied in a downward and backward direction, instead of horizontal, to prevent the head of the bone being brought against the coracoid process of the scapula. It may be necessary to keep up extension much longer, as the resistance is much greater than in axillary dislocation. When the head of the bone is observed to move, is the time for the surgeon to place his knee or heel against it, and press it backward into the glenoid cavity. This pressure directly on the head of the humerus can do no good until it has been drawn below the level of the coracoid process.

After the reduction, the arm should be fixed by proper bandages, and hung in a sling, so that no motion be allowed the shoulder joint for some time. Very little force may at first renew the difficulty.

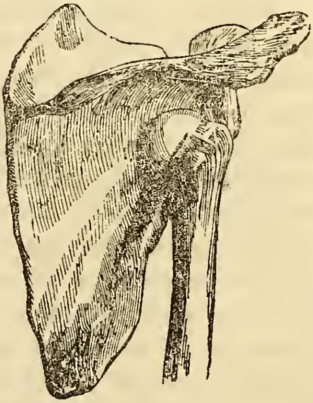
[For a *case* of this variety of dislocation, reduced by the rotary or "Sweet plan," see the conclusion of the Lecture on Dislocation in General, page 598.]

BACKWARD LUXATION—UPON THE DORSUM OF THE SCAPULA.

The *projection* of the head of the humerus in this position, can be noticed at *first sight;* and when the elbow is rotated it is seen to move. It may also be *felt* by applying the finger just below the spine of the scapula. (See Fig. 37.) The *motion* of the arm, although not so much affected as in the former case, is greatly impaired. The change in the *axis* of the limb will be obvious.

This variety of displacement is very rare. But two cases are said to have occurred in thirty-eight years at Guy's Hospital, in the very center of London.

Fig. 37.



The REDUCTION is described as being easy. The shoulder is fixed, and gradual extension made directly outward, the head of the bone being moved slowly forward into its place. It has been reduced by simply raising the arm, and turning the hand to the back of the head.

PARTIAL DISLOCATIONS

Of the humerus are to be treated on the same principles as the complete. The nature of the injury and the distinct varieties, are not so obvious, but the difficulty of replacement proportionably less. Bandages, to prevent recurrences, are as necessary after partial as complete dislocation.

LECTURE XLVI.

PARTICULAR DISLOCATIONS CONTINUED—THOSE AT THE ELBOW AND WRIST, AND OF THE THUMB, FINGERS AND TOES.

OF THE ELBOW JOINT

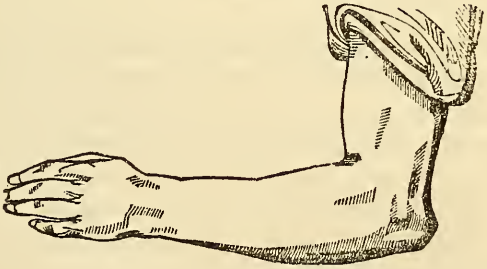
WITHOUT a minute knowledge of the anatomy and mechanism of this joint—of the ligaments and tendons connected with it, as well as of the bones and muscles—no practitioner can be safely trusted in any injury of so complex a part. As the elbow is very much "in the way" of accidents, this is equivalent to saying that every practitioner of medicine ought to know all about it. If he does not, he will often commit serious oversights and blunders, exposing himself to censure and to prosecution for mal-practice—though this *last* danger is not so great as it ought to be. Hence the frequency of mismanaged or neglected cases.

There may be no less than *five* very distinct species of dislocation at the elbow, besides complications with fracture, etc., to be noticed hereafter. *Both bones* of the fore-arm may be pushed from their attachments with the humerus at the same time, either *backward* or to one *side.* The *radius* only is susceptible of being displaced *forward.* The *ulna* may slip *back* over the condyle of the humerus, without the radius; or the radius on its side without the ulna, though this last case is not, properly speaking, a dislocation *of* the elbow joint, but only of a connected bone *at* the joint.

OF BOTH RADIUS AND ULNA BACKWARD.

This accident, though attended with only a partial loss of *motion*, produces a complete change in the *appearance* of the joint—(as seen in Fig. 38.) The posterior projection of the elbow is very prominent. The olecranon process is above the external condyle, instead of being on a level with it, as it should be when the arm is extended. A deep hollow may be felt on each side of it; while in front, under the tendons, the condyles appear like hard tumors. The hand and fore-arm are in a supine position and can not be entirely turned. Spontaneous rotation of the hand is almost wholly lost.

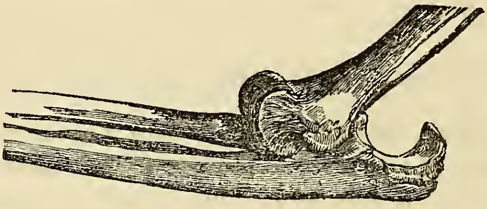
FIG. 38.



The occurrence is almost always brought about by the individual stretching out his hand to save himself in a *fall*, the pressure coming on it *before* the fore-arm is entirely extended. Thus the whole weight of the body, increased by the hight fallen through, is brought to bear on the joint, behind the axis of the humerus.

The REDUCTION is easily effected. The surgeon places his knee on the inner side of the elbow or at "the bend of the arm," pressing most of the dislocated bones so as to keep them from bearing on the end of the humerus, and to separate the coronoid process out of the posterior fossa of the humerus and allow it to pass over the condyles—(a glance at Fig. 39 will give the reason for this direction.) Considerable *force* must be used in *bending* the arm while the knee is strongly pressed upon it. This force should be applied slowly and steadily, however, the proper direction being given to the bones as it proceeds. It is frequently desirable to divert the patient's attention, while this flexion and extension are being made.

Fig. 39.



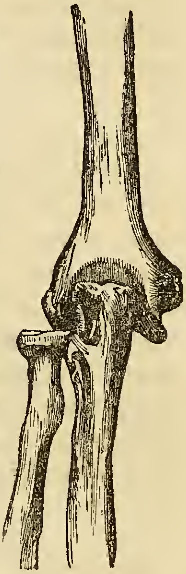
This dislocation may often be remedied a *long* time *after* its occurrence, in which case you should premise proper applications, such as warm fomentations and emollients, before proceeding to the operation.

After having accomplished the reduction, you should have the joint kept wet with cold water, and the arm suspended in a bent position in a sling. It is still better to put on a splint, which effectually secures the joint. It should not, however, be kept bent too long—though the danger from this is more to your own reputation than the patient's limb. I once had a case where, for fear of reproducing the dislocation, I required my patient—a boy of twelve years—to keep his arm in the sling for several weeks. When he took it out the joint was stiff, and I was severely censured for having, as the parents supposed, failed to properly "fix the joint"—though the real fault was in *fixing* it too long. A few days' attempt at motion, with a suitable liniment, restored the proper use of the arm. (The liniment I directed on that occasion was composed of equal parts of Spirits of Ammonia .and Turpentine, Camphor and Olive Oil.)

Lateral Dislocation of Both Joints.

This mode of displacement, whether *outward* or *inward*, is a modification of the last, the bones being also driven more or less *backward.*

Fig. 40.

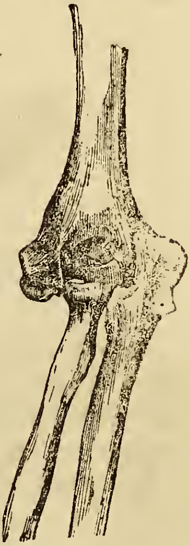


The CAUSE is generally the same as in the last case, the force being directed more to one or the other side.

The SYMPTOMS are still better marked. When the dislocation is *outward* and backward (as in Fig. 40), the projection of the ulna is much greater than when it is only backward. The coronoid process, instead of sinking into the posterior fossa of the humerus, is fixed at the external condyle, and the flat head of the radius forms a projection behind and outside the elbow, with an abrupt cavity above it. Its turning can be distinctly felt on pronating or supinating the hand.

In the *inward* and backward luxation (represented by Figure 41) the head of the ulna is thrown behind or over the internal condyle, and projects in that direction, while the external condyle is made equally prominent on its side, by the radius leaving its place and occupying that of the ulna, its head resting on the articulating surface or posterior fossa.

Fig. 41.



The REDUCTION of these cases is accomplished in the same manner as directed for the simply backward luxation, to-wit: the bending of the arm over the surgeon's knee. Little or no difference of management is required in either case. The operation may be even simpler than the one referred to. There is not the same reason for first separating the bones from the humerus, as when the coronoid process is fixed in its posterior fossa. The tendons of the biceps flexor and the brachialis internus, moreover, being stretched over the end of the humerus, tend to force it back into its natural situation, as soon as the arm is straightened, in spite of them. Sir Astley Cooper thus speaks of a case he treated by mere extension: "Finding that the tendons of the biceps and (as I knew) of the brachialis internus, were put upon the stretch, I thought I might make use of them to draw the os humeri backward, as by the string of a pulley, and I forcibly extended the arm—when the dislocation was immediately reduced." *

Of the Ulna Backward.

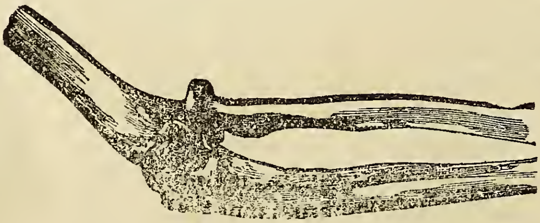
The olecranon can be clearly felt behind the humerus. The arm can be neither straightened nor flexed to more than a right angle. The distinguishing mark of the case is a backward projection of the ulna, together with a twisting inward of the forearm and hand.

The same mode of REDUCTION may be directed as in the other cases. It is generally more easily accomplished. The *bending* of the arm is here the essential part of the operation, as the fixed radius then acts like a lever to push the humerus back into its place in the ulna.

Of the Radius Forward.

The fore-arm is found more or less bent, but it is suddenly stopped, on attempting to flex it further, *before* it gets to a right angle, the elevated head of the radius bearing against the fore part of the humerus (see Fig. 42). In this place it may be felt moving, if a finger be pressed into the "bend of the arm" when the hand is rotated. The patient himself is unable to effect this movement to any considerable extent, the hand being kept pronated.

Fig. 42.



The REDUCTION of this accident would seem to be more difficult, if we might judge by the number of unreduced cases, and the neglect were not rather to be attributed to failure of diagnosis, which is still more inexcusable.

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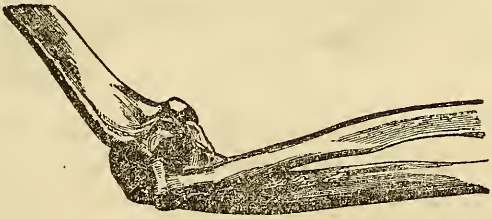
* Cooper on Dislocation and Fractures, page 389.

Let the surgeon, seizing the patient's hand by one of his, as in "shaking hands," or by the thumb and fore and middle fingers, make steady extension, while his other hand is pressed strongly upon the ulnar side of the head of the radius, pushing it both outward and downward. The arm had better be slightly bent so that the muscles may be relaxed. As the pronator teres tends to draw the bone toward the ulna, force applied between the bones so as to separate them, and at first slightly *raise* the radius, may perhaps aid your operation.

OF THE RADIUS BACKWARD.

The head of the radius may be both seen and felt behind the external condyle of the humerus (see plate No. 43). The arm is nearly straight and can not be flexed; the hand pronate and can not be turned. The surface in front of the joint is relaxed, and presents a sudden depression just below the external condyle. If the *front* of the radius be traced from below upward, the finger will come in contact with the condyle; and if the *side* be traced, the finger will pass over the head on to the olecranon process.

Fig. 43.



The REDUCTION, if attempted early, is not generally very difficult; but these cases are frequently neglected so long that any attempt to reduce will be fruitless, or result in more injury than benefit to the patient. *Extension* is to be made upon the radius, with counter-extension upon the humerus, while firm pressure is made on the head of the bone until it slips into its place. One assistant can pull upon the hand, while another holds the upper arm, and the surgeon directs the movements of the bone.

Luxations at the Wrist, Joints of the Hand, Etc.

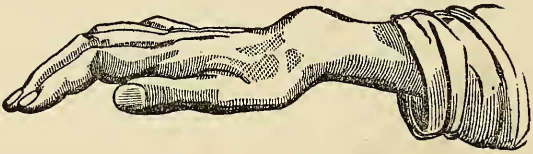
The wrist joint is liable to severe displacements. *Both* radius and ulna may be dislocated together, either *forward* or *backward*, or each of them may be separately displaced in either direction—thus making *six varieties* of luxation. First,

Of both bones forward: The projection of the bones of the arm *under* the carpus or forward, happens from falling upon the *palm* of the hand, the ends of the radius and ulna bearing with great force against the annular ligament, while unprotected by the carpal bones, they being bent backward. On the contrary, the displacement

At the back of the wrist takes place when a person falls on the *back* of the hand, so that the arm bones may be similarly thrust *over* the carpus, while the carpal bones are thrown forward and upward under the flexor tendons, in front of the fore-arm.

The distinctive symptoms are indicated in this account of the nature of the accidents. In the former case there will be a manifest protuberance on the *front* of the wrist, with a somewhat similar but *smaller* one at the back of the wrist, produced by the carpal bones. The hand is bent back out of the line of the forearm. In the latter case—the luxation *backward* or to the back of the wrist (represented by Fig. 44)—the symptoms are exactly reversed. There being projections both behind and before in either case, can never occasion their being confounded. The direction of the edges or ends of the projections, as well as of the hand, will immediately show the nature of the case.

Fig. 44.



Strains of the wrist, produced by falls and other violence, may occasionally simulate dislocation. They may be *distinguished* by the fact of the questionable symptoms coming on gradually, and not showing themselves immediately after the accident, as in actual dislocation. There will also be more flexibility of the hand; nor will the swellings be likely to imitate accurately the separated extremities of the arm and carpal bones.

The reduction is similar in both cases. The surgeon takes hold of the patient's hand in one of his, while the fore-arm is supported by his other hand. An assistant meanwhile holds the arm at the elbow, keeping that joint slightly flexed. As soon as sufficient force is applied in the different directions, the natural action of the muscles throws the bones into their proper place.

As soon as the reduction is effected, compresses should be placed upon the wrist and secured by a roller, the part being kept constantly wet with cold water or spirits and water. The roller should inclose the whole hand, commencing from the end of the fingers and be continued, moderately tight, up to the elbow. A splint should afterward be added, and the fore-arm suspended in a sling.

These accidents are very painful and liable to much swelling, if means are not instituted to prevent it; but uniform and pretty tight bandaging will generally do this, if applied early in connection with the cold water. If the parts, nevertheless, become very painful, they should be fomented with warm water or vinegar, or hops and vinegar, or any of the bitter herb fomentations. Salt and Vinegar is a good application to prevent inflammation.

SEPARATE DISLOCATIONS AT THE WRIST.

OF THE RADIUS ALONE (the ulna adhering by the ligamentous attachment), the external or *thumb side* of the hand is twisted backward and the opposite side inward or forward. The extremity of the radius may be felt and generally seen also, forming a prominence in the front of the wrist, its styloid process being removed from its station opposite the trapezium. The same treatment is required for reduction and dressing as in the *complete* dislocation, that is, displacement of both bones together.

THE ULNA ALONE is oftener dislocated, or rather detached from the carpus (it forming no part of the wrist *joint*) than the radius alone. The accident is always accompanied with *rupture of the ligament*. The ulna generally projects at the back of the hand. The hand is twisted. The bone may be easily pressed down from where it appears on the back of the wrist, but will not stay in place. When the pressure is taken off, the deformity is renewed, the muscles drawing it up, the ligaments that should keep it down being torn away.

The accident is always to be *ascertained* by the projection of the ulna above a level with the cuneiform bone, and the change in the position of its styloid process which is thrown out of its proper line with the metacarpal bone of the little finger.

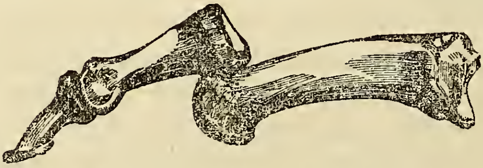
To accomplish the REDUCTION, all that is required to be done is simply to place the ulna down in its proper cavity at the side of the radius, and retain it there by suitable compresses and splints. The latter should extend along the fore-arm in a line with the back of the hand. They should be well padded and then secured by a roller.

OF THE CARPEL AND METACARPEL BONES.

Luxations between these bones are accidents of very rare occurrence. They are easily ascertained when there is no tumefaction, by the bones rising on one side or the other. Any bone so rising can be easily pressed down again and secured, the hand being [extended when the pressure is applied. Proper compresses and bandages are then to be kept on until all danger of recurrence has disappeared.

DISLOCATION OF THE FINGERS AND TOES.

Fig. 45.



This accident may be brought about by various causes—at any of the phalangeal joints—and in either direction; the smaller bone being pushed over under the larger, constituting what are distinguished as the *posterior* (Fig. 45) and the *anterior* (Fig. 46) dislocations.

The SYMPTOMS need not be described. The nature of the case will be plain at the very first sight. There will sometimes be very great rupture of the ligaments, while at others very slight injury may be done.

In REDUCING a dislocated finger or toe, let the operator place his thumb at one of the divided extremities, and his finger at the other, *then* make extension (as he is represented doing, without the former expedient in the cut, Fig. 47), while the joint is gently flexed; and the parts will very easily regain their proper place, unless considerable time has elapsed since the occurrence of the accident. In such a case, *extension* has to be kept up for some time, and should be perseveringly attempted before the case is abandoned. For this purpose, where much force has to be used and kept up for a long time, a piece of *tape* should be fixed to the finger by the "clove-hitch" (Fig. 48) and the extending force applied to this.

Fig. 46.

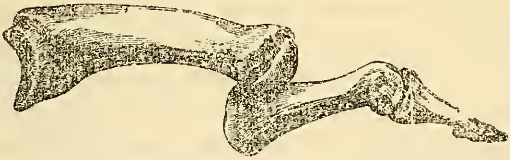


Fig. 47.

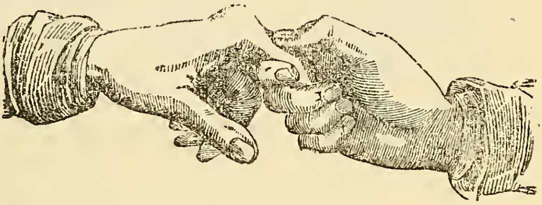
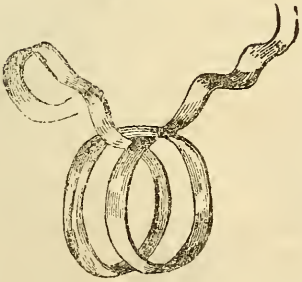


Fig. 48.



Toes are more difficult of adjustment than fingers, owing to their shortness and their joints being less palpable. The dislocation is sometimes brought about by the contraction of the tendons.

DISLOCATION OF THE THUMB.

This is rather a rare occurrence, but deserves separate mention from the *difficulty* of REDUCTION, occasioned by its strong ligaments and muscles. The deformity and inconvenience resulting from the accident will be a sufficient diagnosis. To reduce it, frequently requires very great extending force. This can be best applied by means of strong tape fixed round the thumb (by the above clove-hitch), this being pulled upon while the divided extremity is pushed toward and into its place, in the same manner as directed for a finger or toe, though there is often so much tenderness that the main dependence must be upon the extension by the tape *roller.* During the operation, the thumb is to be flexed or bent toward the palm of the hand, so as to relax the flexor muscles. Care should always be taken to well bandage the thumb with other wet tape, before fixing on that to which the force is to be applied.

LECTURE XLVII.

DISLOCATIONS OF THE LOWER EXTREMITIES.

OF THE FEMUR AT THE HIP JOINT.

THIS important JOINT, though well secured by cartilage and ligament, particularly the cotaloid ligament, which greatly deepens the acetabulum, is subject to too much violence not to be occasionally dislocated. The thigh bone being inserted into it obliquely, requires the more study to understand its mechanism and derangements.

Four distinct dislocations require to be noticed. The head of the femur may be thrown, 1st, *upward,* on the Dorsum of the Ilium (Fig. 49); 2d, *downward* into the Foramen Ovale, (Fig. 50); 3d, *backward* into the Ischiatic Notch (Fig. 51); 4th, *forward* and upward *onto* the pubes, (Fig. 52.)

UPWARD DISLOCATION—*on the Dorsum of the Ilium.*

That where the femur rests on the concave *side* of the pelvis, is by far the most common, being the necessary result of sufficient violence in an outward and upward direction.

Symptoms.—The limb is from an inch and a half to two inches and a half shorter than its fellow—from which it can not be separated, the knee being advanced toward the opposite one, though not reaching it. In plainer language, the knee and foot are both "turned in," the toes resting on the other foot (as seen in the illustrative Fig. 53—compare also Fig. 49). The thigh can be bent over the opposite one. The round head o the bone can be felt moving upon the ilium, when the knee is rotated, at least if there is not much swelling, or the patient is not very fleshy. The affected "hip" or side of the pelvis, is

Fig. 49.

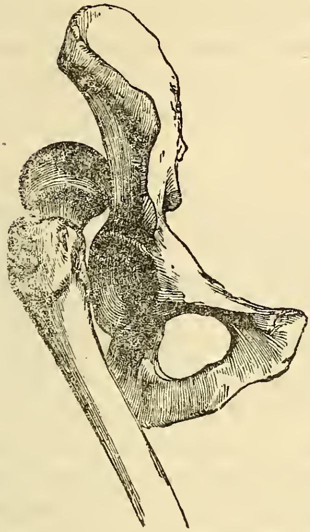


Fig. 50.

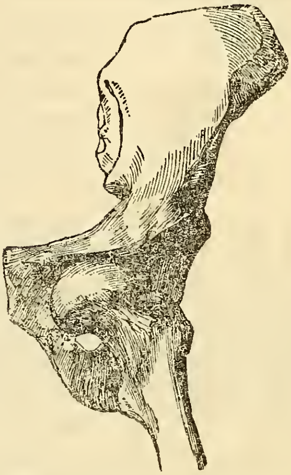
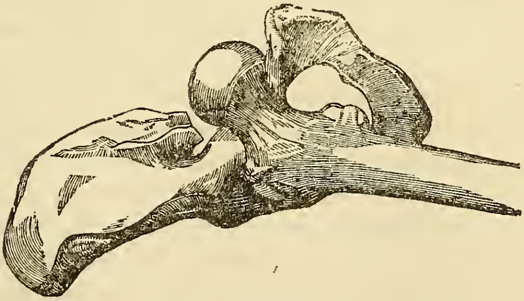


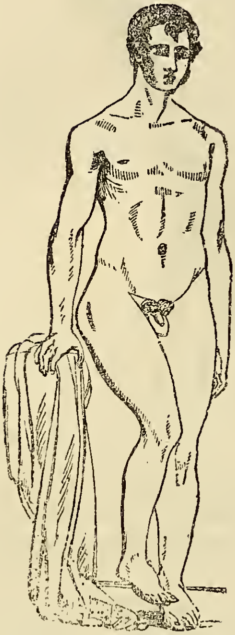
Fig. 52.



much less evenly rounded than natural, and the trochanter major is nearer the superior *anterior* spinous process of the ilium.

Fracture of the *neck* of the thigh bone, which may be confounded with this accident, rarely occurs except in very *old persons;* and in that case, though the leg is shortened, it can be easily extended, contracting again when the force is withdrawn: the knee also is generally turned *out* instead of *in*.

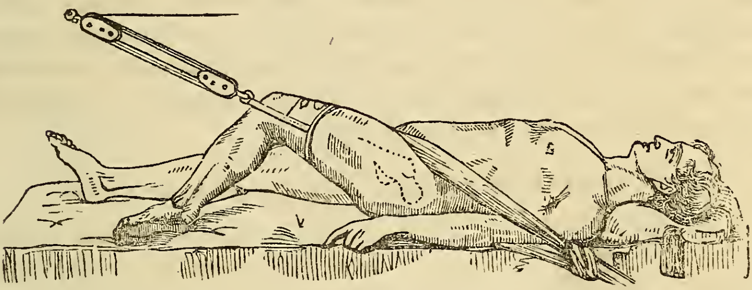
Fig. 52.



Previous to REDUCTION, it will generally be necessary to produce some *relaxation* of the muscles, and in some cases this must be carried as far as the patient's safety will permit. Repeated doses of some nauseant will effect the object, and as good a one as any is our common emetic (Form No. 4). The same or even a stronger preparation of Lobelia may be used as an injection. The warm bath may be also resorted to with advantage. The most complete insensibility and relaxation may be produced by the use of Ether or Chloroform (see Introduction and Appendix). When the relaxation is deemed sufficient, wrap the patient up, so as not to allow him to get chilly, and proceed to the

OPERATION, by laying the patient on a table, or placing a board, covered with a quilt or blanket, under him, on the bed. Pass a strong *counter-extending* strap between his legs. A sheet split in two, and folded so as to be about four or five inches wide, will answer the purpose. This should be so placed as to press upward on the perineum, at the inside of the dislocated limb, passing up before and behind his hip (as represented in the accompanying plate, Fig. 54, and explained by Fig. 49.) Fix the two ends of this strap or bandage to some unyielding point—a post, staple in the wall or the like. Then apply round the leg, just above the knee, a wet bandage. Give it eight or ten turns, fixing by its means your *straps for extension.* These are to be drawn upon by assistants, or what is generally safer and better, to be attached to a pulley, so stationed that the force may bear in the direct line of the limb with the fastening of the counter-extension. This consideration must be kept in mind when the surgeon or assistant comes to pull on the straps or cord of the pulleys, so that the limb be extended in the direction of its longest axis, and the head of the femur forced directly toward the acetabulum.

Fig. 53.



Steadily increase the *extending force* until the patient complain, then *hold* for a few moments, without letting back a hair's breadth, until he gets easier. Increase the tension again as far as it can be borne, and so continue, stopping and resuming, until the head of the bone has reached the edge of its socket. At this point, the surgeon intrusting the extension wholly to his assistants, *directs* the movement, rotating the limb a little, and perhaps contriving to elevate the head of the bone until it enters the acetabulum. When counter-extension is made by manual force, it can be heard to *snap* as it slips in, but with the more gradual and steady extension of the pulleys this sign is not always to be noticed.

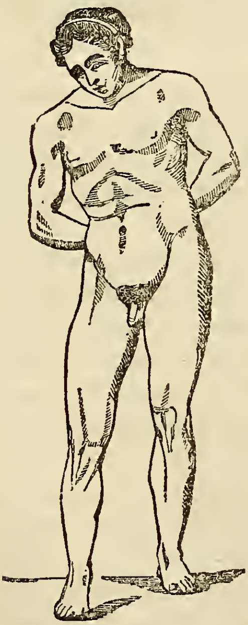
Unless this snapping of the joint is plainly heard, the extending force should not be withdrawn, till the surgeon is fully satisfied that all is right and safe. This he can only be sure of by actual measurement. If reduction has been effected, it will be found that each trochanter major is equi-distant from the superior spinous process, and every other fixed point of its respective side, the length of the limbs being also equal. The head of the bone is sometimes held fast over the *edge* of the acetabulum. To prevent this a towel or strong handkerchief should be placed round the thigh, as high up as possible, and the bone lifted by it at the right moment.

To guard against a spontaneous RECURRENCE, apply a compress over the reduced hip, and bandages around the pelvis, so as to prevent all motion as far as possible for several days.

Some *inflammation* and symptomatic *fever* are not unlikely to ensue, when much force has been used and the muscles much bruised or tendons strained. As, in fact, this is always more or less the case, keep the hip and any other injured parts constantly wet with cold water. Give the patient a mild cathartic, and keep up an equal circulation. Let him rest perfectly quiet, until all danger is past. Generally, from two to three weeks' confinement will be sufficient. Even then, before he is allowed to use the limb again, passive motion should be practiced several times a day for several days.

DOWNWARD DISLOCATION—*into the Foramen Ovale.*

Fig. 54.



In this case, the head of the bone can generally be felt in thin persons, by examining the inside of the thigh. The trochanter is less prominent than on the sound side. The *leg* is about two inches *longer* than natural. The *body* is *bent* forward from tension of the psoas and iliacus muscles; or, if the patient stand erect, the *knee* will project in advance of its fellow, but is kept wide *apart* from it by the action of the glutei and pyriformis muscles. The *foot* is thus separated from the other, but is neither turned in nor out. Below Poupart's ligament, a *hollow* may be noticed—[compare Figures 54 and 50.]

The REDUCTION is much easier than in upward dislocation. Place the patient on his back, separate the thighs, and fix a girth or folded cloth over the perineum, as directed for counter-extension in the former case—so that when the two ends are drawn upon, the force will bear against the inner and posterior surface of the bone—that is, *from* the foramen and *toward* the acetabulum. Pass another strong girth or band transversely around the pelvis, above the acetabulum, the front end passing over the former strap (so as to give it a more upward direction.) This cross or counter-extension is to be made as before from a post, staple or other fixed point. Force is now to be applied by pulleys (or otherwise) to the first strap; and, as the head of the femur begins to rise, let the surgeon pass his hand under the opposite leg, and seizing the ankle of the affected one, bring it gently but firmly toward the other. This movement, in connection with the pressure at the other end of the limb, will bring it into its proper place.

Fig. 55.

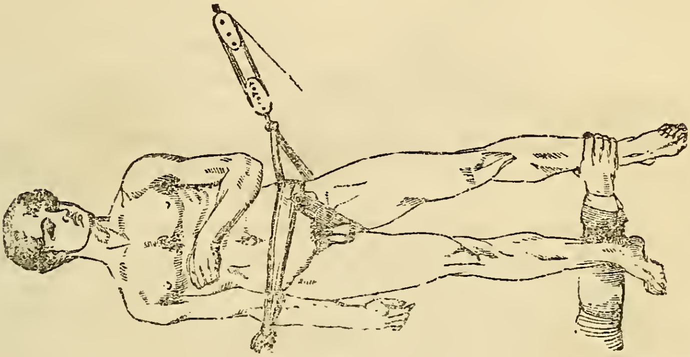
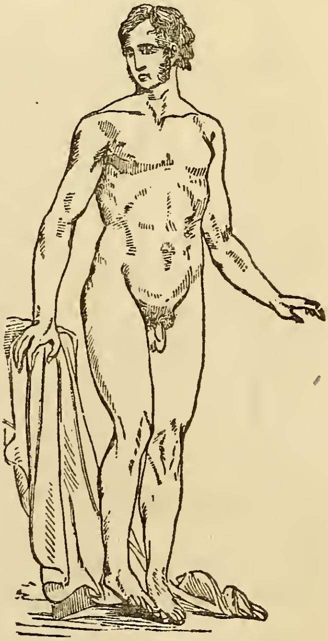


Fig. 56.



Backward Dislocation—*into the Ischiatic Notch.*

In this case, the head of the femur being deeply lodged, can rarely be felt. The position of the *trochanter*—though it is not turned down, flattening the hip, as in the upward dislocation—being further back than natural, will indicate the mal-position of the *head*—(Figure 56). The displacement of the trochanter may be accurately ascertained by measuring, on each side, from the spinous processes of the sacrum. The foot and knee turn inward, the knee being also a little flexed and advanced forward, the heel raised, and the ball of the great-toe resting on the base of the other great toe. The limb is shortened, but not more than from half an inch to an inch. The limb can not be further flexed or straightened, nor rotated, without much force and pain.

Fig. 57.

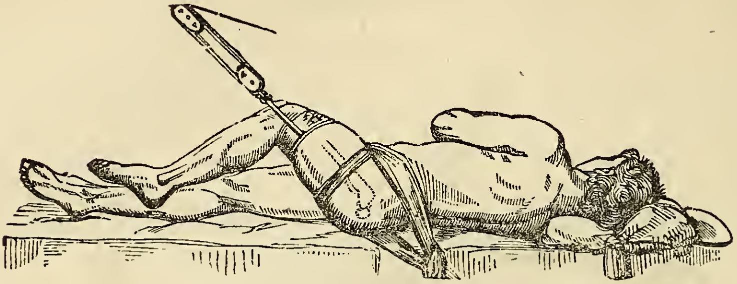
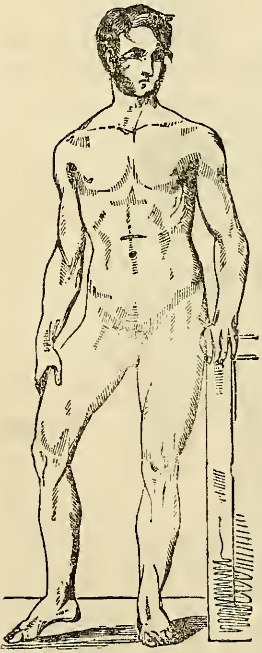


Fig. 58.



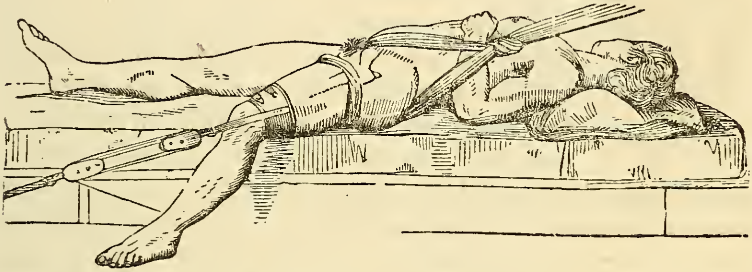
his variety of dislocation is the most *difficult* of all to REDUCE. The patient should be placed upon a table or board, as directed for the first form of dislocation, but on his sound side instead of his back, with the affected thigh drawn over the middle of the other. Use the same means for extension and counter-extension as in that case, with the addition of a towel or strap round the upper part of the thigh (and carried over the shoulders of an assistant), to raise the head, at the very commencement of the operation, out of the notch, or to impart a lifting direction to the extending force. The surgeon should also press the trochanter forward with his hand.

After reduction, secure with bandages, as in other cases.

Forward and Upward Dislocation—Onto the Pubes.

The head of the bone in this case, is easily discovered in front and a little above the level of Poupart's Ligament (Figures 52 and 58). This circumstance distinguishes the case from fracture of the cervix, in which accident, as well as here, the *limb* is *shortened* and the foot and knee *everted.* The shortening of the dislocated limb may be from one to one and a half inches. The foot and knee can not be rotated inward, but the thigh can be flexed, bringing them forward. In REDUCING, place the patient on his sound side, and fix the counter-extending force somewhat in front of a line with the body, the point of *extension* being as much behind. This arrangement of forces will draw the limb *backward* as well as downward. Use the *lifting bandage* as the operation proceeds, the assistant pressing down on the pelvis as he raises the head of the bone over the pubes and edge of the acetabulum. When the operation is complete, secure everything as before directed.

FIG. 59.



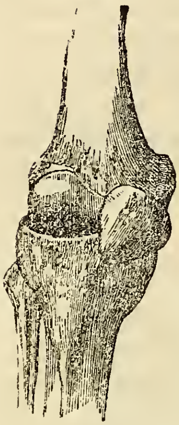
[These dislocations of the hip may, any of them, be occasionally reduced by the rotary plan, mentioned under the general head (page 598–9). A case where the femur had remained two weeks upon the dorsum of the ilium is there alluded to. Almost every day, during that time, other means had been tried. The object was effected very easily by raising the heel as far as possible toward the abdomen, across the other thigh, and keeping it there for a minute or two; and then, while the patient's attention was directed another way, a sudden circular motion was given to the limb, and the heel brought down again to its natural position, when the bone snapped into its place and all was right.]

DISLOCATIONS AT THE KNEE.

The PATELLA may be displaced *outward*, *inward*, or *upward.*

Of the LATERAL DISLOCATIONS the *outward* (Fig. 60) is far more common than the inward. In either case, the knee is partially flexed and the joint immovable, the patient complaining of a "sickening" pain in it. In *reducing*, place the patient in a recumbent posture, and raise the limb by the heel, thus taking off the tension of the extensor muscles. Then press *down* the *edge* of the patella most distant from the joint. This will raise the ridge on the posterior *surface* so as to let it pass over the condyle, when it will be naturally drawn to its place by the action of the vasti and rectus muscles.

Fig. 62.



The UPWARD DISLOCATION, with RUPTURE of the ligament, is a very obvious case, and there will be little more difficulty in the *reduction* than in the diagnosis. The difficulty is in keeping it reduced. Special precautions, also, must be taken against inflammation: apply cold water or Spirits, with Salt and Camphor. But among the best as well as the *handiest* means for *keeping down* both the inflammation and (what is the peculiar object of treatment in the case), *the patella*, at the same time, is the application of a *roller* to the *whole leg* from the toes to the groin. This will restrain vascular excitement, and directly keep the loose parts in proper position, and to a great extent paralyze the muscles of the thigh, that would otherwise be sufficient to overcome all retaining force that could be conveniently applied.

A very ingenious recent invention for keeping the patella in place, after dislocation or fracture, will be described, with a plate to illustrate, in connection with the subject of FRACTURES.

OF THE TIBIA AT THE KNEE.

This bone may be separated from the femur in four ways, *forward*, *backward* or to *either side*.

The LATERAL displacements are only *partial*, one condyle resting on the head of the bone where the other should be, and that other projecting to one or other side, external or internal, as the case may be—a part of the head of the tibia forming another tumor on the opposite side (see Figures 61 and 62).

In the FORWARD dislocation (see Figure 63) the head of the tibia is distinctly seen and felt above the front of the condyles, while these are perceived in the popliteal space. There is such pressure on the nerves and the popliteal artery as to stop the pulsations of the anterior tibial artery, and to cause more or less numbness of the foot.

Fig. 61.

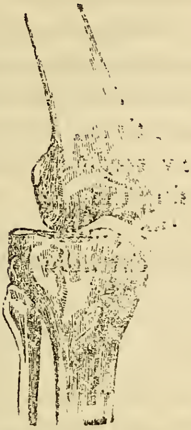


Fig. 62.

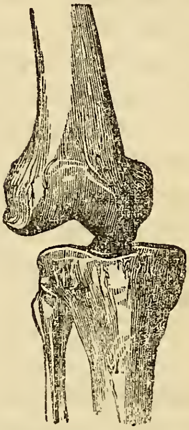


Fig. 63.

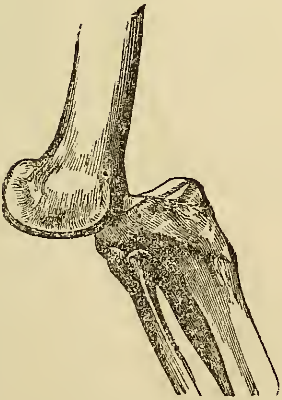
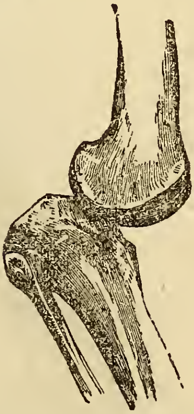


Fig. 64.



In the BACKWARD luxation (Fig. 64) the limb is slightly bent and sensibly shortened. The condyles project, causing a depression of the ligamentum patella; and the *bend* of the limb is, of course, *backward* instead of forward, the *foot* being drawn forward.

Reduction is mainly accomplished in all these cases by simple extension. The pelvis is fixed and the force applied by means of a bandage round the ankle. I have found that in most cases the patient can sit in a chair, while you place your own *knee* under *his*. Press also upon the separated head of the bone with your *hands*, while your assistant pulls *suddenly* but forcibly upon the *ankle*. Thus the force of the muscles is counteracted and the limb flexed at the same time. In this manner I have several times succeeded in a few seconds. The success of the maneuver depends on first raising the heel, as in dislocation of the patella, and then, while the patient's attention is attracted to some other object, quickly extending and flexing the limb *into place*.

Of the Foot.

Dislocation at the Ankle may occur in various directions—*outward*, *inward*, *forward*, and (very rarely) *backward*. There are generally complications.

Fig. 65.

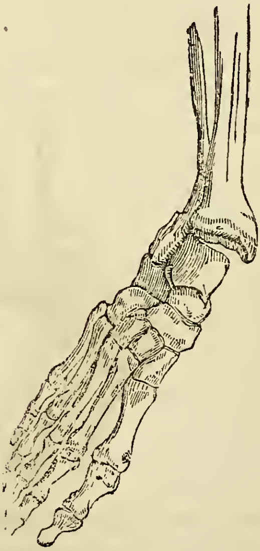
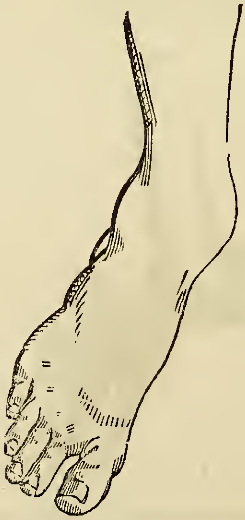


Fig. 66.



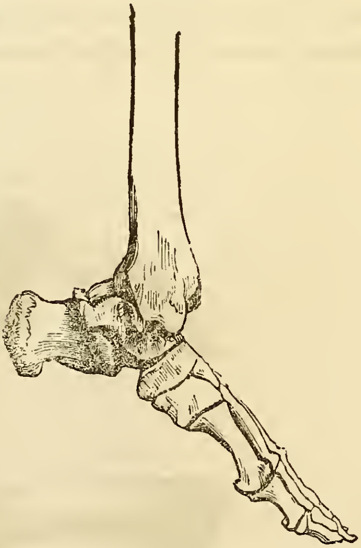
The dislocation inward is the most common. A tumor is caused by the internal malleolus pressing so firmly against the skin as almost to burst through (see Fig. 66). The foot is turned out, but the joint is still movable. The fibula (as here represented—(Fig. 65) is almost always *fractured* about three inches above the ankle, where a depression may be felt.

To REDUCE, let an assistant take hold of the foot by the heel and toes, *flexing the leg* to a right angle with the thigh, and—while the thigh is held fast by another assistant just above the knee—make extension at the ankle, the surgeon at the same time pushing the end of the tibia back to its place. There fix it with splints and bandages, and keep it wet with cold water, or Salt, Water and Spirits of Camphor, to subdue or prevent inflammation.

The OUTWARD dislocation is easily distinguished by corresponding deformity on its side, and other similar symptoms to those of the last case. It is to be *reduced* in a similar manner and *dressed* with great care to avoid excessive inflammation, as the joint is generally much injured. The violence is great: the internal malleolus is frequently, and the astragalus occasionally, fractured.

In the dislocation FORWARD the foot appears shortened and the heel elongated. The toes point downward, and the foot is immovably fixed in that position, where it is kept by the extremity of the tibia—which can be felt pressing on the top of the foot or instep, while there is a great depression beneath the Tendo Achillis. *Reduction* and subsequent *Treatment* are the same as in the former cases.

Fig. 67.



In *all cases* of dislocated ankle, much pain is suffered, and swelling will soon occur. To keep down inflammation, much may be done by *good* and early *bandaging*. A roller should be firmly and (with the aid of compresses) *equably* applied over the whole foot, beginning at the ends of the toes and continuing considerably above the affected joint, even to the knee. Cooling lotions can be applied through the roller.

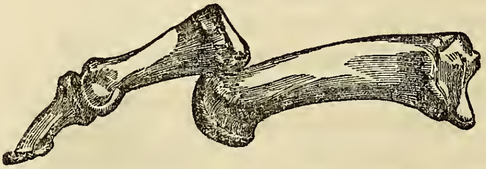
It should be borne in mind also by the physician, and impressed on the minds of patients, that it may be several weeks or even months, before the foot can be freely used. As soon, however, as the soreness has sufficiently subsided, some *passive* motion should be used to prevent stiffness of the joint. The foot may be regularly flexed and extended several times a day. No weight must be borne upon the foot until thus prepared for it. Where this precaution has been neglected, much inconvenience has often resulted.

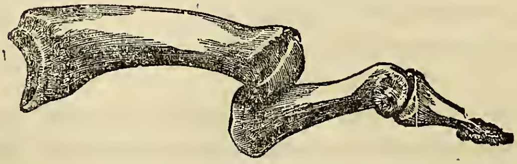
Dislocations of the Tarsus and Metatarsus.

When the os calcis, astragalus or other bones of the foot are dislocated, the nature of the case needs no description. *Reduction* can be effected by extension of the foot, in connection with directly pressing the bones into their proper places. They require compresses and bandages to keep them there, and the proper dressings to keep down inflammation.

Dislocation of the Toes.

Was taken up in connection with that of the fingers (page 620). The symptoms are very similar in both, and the same principles are applicable for reduction.





LECTURE XLVIII.

OF FRACTURE IN GENERAL.

Before entering upon the subject of fractures, I may call your attention for a moment to the mechanical means and appliances—splints, bandages, etc., that you will need in the treatment of these cases.

There has been a good deal of this sort of apparatus invented, to facilitate the surgeon's object. Some of these inventions, particularly some recent ones, are very convenient. I shall not describe the use of any of them, as they all explain themselves, or have the necessary directions accompanying them. Others still better are no doubt yet to be invented.

Inasmuch, however, as many of these things are too expensive for the physician, with a limited surgical practice, to be expected to keep; and as therefore few practitioners, especially in the country, will have access to them when the occasions for using them occur—I deem it the duty of the teacher of medicine to give such directions respecting the making of splints and all other necessary means, as will enable the country practitioner to furnish himself at the right time with all that is requisite. And I would here remark that, in all cases and all places, the true surgeon will exercise his own ingenuity and judgment, and adapt his mechanical appliances, no less than his medical treatment, to the exigencies of the case before him, regardless of any particular directions or models presented by his teachers or authors. All that the teacher can do, is to communicate such general principles, with such examples by way of illustration, as will prepare the student both to *think* and act aright. With a general knowledge of what is necessary, and a particular knowledge of much that has been done, the practitioner is left free to devise or adopt any plan that may appear to his judgment best—whether really an improvement on what others have done, or only the best that can be under the circumstances. No lecturer or writer pretends to anticipate all the peculiarities and exigencies of actual practice. Among the illustrations, if I ought not rather say, among the *principles*, with which the student should be familiar, is the proper use of the BANDAGE . Hence I have given in detail some directions on that subject, (see Introduction and more particularly page 138).

SPLINTS may always be made of thin pine or poplar boards, when the occasion calls for them, though as manufactured ones are very cheap, the surgeon might always have some on hand of different sorts and sizes, properly covered and ready for use. Still he may not have such as will suit every case.

As a general rule, the simplest apparatus is the most effectual—such as the surgeon's own good sense will suggest, at the moment it is wanted.

The violence which CAUSES fracture must be a force applied to some point in the *body* of the bone while its extremities are fixed, or to the *extremities* while the *fixed* point is intermediate. The fixed as well as the moving *force* equally concurs in the effect. Thus the contraction of the muscles acting on the bone often contributes to its fracture, and is sometimes sufficient to produce it without any extraneous force. When what is considered "*the* cause," that is, the *moving* force is applied at or near the extremities, the bone generally breaks near the middle; but in other cases at the point on which the force is brought to bear.

LIABILITY to this accident depends much on the age, general health, and constitution of the patient. The imperfectly ossified frame-work of children will often bend rather than break. In old persons, on the other hand, the earthy matter predominates and their bones are quite brittle. Some persons have this brittleness throughout life, and are constantly getting some bone or other broken by accidents that would have no effect on others. In these cases, also, the mending process is often as difficult as the breaking is easy. Some diseased conditions render the bones very brittle, even in young or middle aged persons.

The mode of union between the broken parts is the following: Soon after the accident, coagulable lymph and fibrin, as well as blood, are thrown out by the vessels connected with the parts, and the loose bones become, as it were, slightly glued together, as they may happen to lie in proximity. After a while a "*provisional cartilage*" is formed round the parts, like a capsule, and firmly supports them. This gradually hardens into "the provisional *callus*"—a bone-like ring round the fractured parts, holding them together even more firmly than they were before the accident—though the proper substance of the bone has not yet become whole again. The ossific process goes on, for from five to twelve months, according to age and constitution, and when it is complete the supporting ring or provisional callus disappears. The provisional union, however, by means of the extraneous deposit, may be regarded as the completion of the reparative process, as far as the surgeon is practically concerned.

The PERIOD, after which it will be *too late* to adjust a fractured bone with the expectation of having it united with the ordinary attentions and appliances, varies much in different cases. It will depend much on the particular *bone* concerned, as well as on the *age* and constitutional habits of the individual patient. The inferior maxillary, for instance, will begin to unite about the *sixth* or *seventh day*, or even earlier in very young subjects, and the provisional union be often completed by the end of *three weeks;* while in very old persons it may be much longer before the process begins, and its progress also will then be much slower. The periods are about the same for the ribs and other bones liberally supplied with arterial blood. In bones but moderately furnished with arteries, and more distant from the source of circulation, as those of the extremities, the *provisional union* may be regarded as commencing, in the earlier period of life, sometime between the *eighth* and *tenth day* after the accident, and as being completed in a period of about *five* or *six weeks*. In patients past the meridian of life, the process may be in operation by the twelfth day, but will go on but feebly at first, and is not to be deemed complete or *secure* under from *two* to *four months*.

It may therefore be often "too late" to set or re-set a fractured bone a fortnight after the occurrence of the accident, and in the case of some bones in very young and healthy patients, the lapse of a single week may render any fresh derangement questionable. Simple adjustment and the ordinary dressings will be sufficient in any case that has been neglected till after the period for provisional union to begin.

Hence it is always best, when practicable, to ADJUST a fracture *immediately* after the accident, and to *examine* it again about the *sixth* or *seventh day*, to see that all is right—after which nothing more is necessary than to keep it so. For this purpose great care must be exercised till after the *tenth* or *twelfth* day, or for *two* or *three weeks*, in old persons. From that time forward there is not so much danger from slight motion.

The *evidence* that this provisional ossification has actually commenced, is an extraordinary sensation of itching and pricking in the part—which, however, is not necessarily attended with any great or preternatural determination of blood to the part. Any sensible degree of inflammation, it should be remembered, is not essential to the reparative process (see Lectures on Inflammation).

In very young persons, and in some particular bones, I have known the provisional union to commence in two or three days. In very old persons, and those of feeble and faulty constitutions, it is sometimes a difficult matter to bring about any union. In these cases what is called a FALSE OR UNNATURAL JOINT often occurs. The cause of this, however, is generally the want of proper coaptation.

When *union* does *not* take place after the parts are properly brought together, we are directed to *rub* the fractured *ends* against each other, so as to produce irritation and the supposed necessary inflammation, keeping them afterward at rest and in contact, that the inflammatory action may become adhesive. If it be a leg or thigh, the part may be supported by strong splints and the patient allowed to walk a little, or rest the weight of his body on it, so as to produce the desired amount of irritation by *pressure*. When the uniting process commences, however, perfect rest of the part must be enjoined. It may even be necessary to cut down and *saw off* the fractured ends that refuse to unite, and bring the *fresh surfaces* into contact.

If, however, you give proper attention to the case in the early stage, no trouble of this kind need be apprehended—unless in very old and unhealthy persons. Even in these "hard cases," I doubt not that the bones would unite, if they were rightly adjusted and kept together, and the patient properly treated and *nourished*. The old and absurd practice of starving patients under the mistaken and most mischievous notion that a reasonable quantity of good, palatable food favored the development of inflammation—and that "spare diet," i. e., *starvation*, would prevent that "bugbear of the profession"—has done incalculable mischief. The case under consideration is but a single example. This *starving* and *blood-letting*—this letting out and stopping off *life*, to ward off the *chance* of death—belong to the same category of ancient absurdities, or one-sided views and exaggerations, still practiced by the great mass of the profession from mere force of habit—the *vis inertiœ* of mind—though at the manifest expense of life and limbs.

A FRACTURE is said to be "transverse" when the bone is broken directly across, "longitudinal" when split lengthwise, and "oblique" when in neither of these directions.

CASES of Fracture are DIVIDED into simple and compound, complicated and comminuted.

A SIMPLE Fracture is when a bone is broken at one point (or it may even be at more than one place, but—) without extensive laceration of the soft parts, or at all events without any connected *external* wound.

A COMPOUND Fracture implies—not only a laceration of the soft parts by the fractured ends of bone, or by the instrument with which the force was communicated, so that there must be always more or less "solution of the continuity" of the surrounding parts, but that some portion of the broken bone protrudes *through the integuments.*

A COMPLICATED Fracture is distinguished from a "compound as occurring in connection with the dislocation of a joint, the rupture of some large vessels or ligaments, with a gun-shot wound, or with some condition of the symptom which impedes the ordinary process of ossification, or renders the ordinary appliances insufficient.

COMMINUTED Fracture is, in more idiomatic phrase, when the bone is "broken to pieces," or very much shattered—when there are several fractures so near together that the bone is much divided or splintered.

A *simple fracture* is attended with but little *danger:* all the others with considerable. The amount of danger depends as much on the age and constitution of the patient as on the nature or *name* of the injury. Even a simple fracture may be more serious in one patient, than the most complicated or comminuted one in another.

Hence the necessity for AMPUTATION, in any given case, must be decided very much by the discretion of the attending surgeon. Only general rules for aiding his decision, but no precise directions, can be furnished him.

Amputation *may* be requisite if large vessels or nerves are lacerated, tendons ruptured, the bone much shattered, the knee or some other joint irreparably injured; or even if the laceration of the soft parts be so considerable as to lead to extensive mortification and sloughing. The general strength of the patient, as well as the chance or probability of sufficient restorative power, must be considered. Of all these and other circumstances, the practitioner must be his own judge at the decisive moment.

General Directions for the treatment of Compound and Com minuted Fractures will be given, after going through with the different fractures of the Trunk and Extremities in their order [see Lecture L].

LECTURE XLIX.

PARTICULAR FRACTURES OF THE HEAD AND TRUNK.

Fractures of the Cranium.

The skull-bone may be merely *cracked* in a straight line through one or both plates; or it may be *crushed*, the fractures extending in different directions from a central point. When the outer table only is crushed, it may be depressed into the diploe, or porous space between the two plates.

The symptoms are generally of easy detection. When the skull is crushed, crepitus can be felt through the skin. There are more or less marks of violence on the surface. If the scalp be torn, as is most frequently the case, the wound should be explored with that best of probes, the *finger*. If much time has elapsed, there will be a considerable tumor, which may prevent the proper examination until it has subsided.

It must not be forgotten that the skull-bone may be bent in without being fractured. If there be evident symptoms of COMPRESSION upon the brain, and these do *not subside* by the use of proper constitutional and local remedies; and it is ascertained, moreover, that the blow upon the head was made by such an instrument as would be likely to produce fracture, without lacerating the surface—there will be strong reason to suspect its existence. In such a case if examination through the scalp be not decisive, or be prevented by the swelling, a portion may be removed, sufficient to permit the proper examination, and to trephine, if necessary.

A severe blow on the head by a fall or otherwise, may occasion fracture of the skull at some other point than that where the foreign force was received. Thus the base of the skull may be fractured, when the top of the head is struck. When the temporal bone is broken in this way, blood will flow out of the ears.

SYMPTOMS of *compression* will always be present if the bone is depressed, but though an *effect* they are not an *evidence* of depressed bone, as they may result from extravasated blood where there is only a slight fissure without any depression.

SYMPTOMS of *concussion* must be distinguished from those of compression. The former will be present for a short time in nearly all cases of fracture, as well as after other blows on the head, when the bone is uninjured (see under Wounds of the Head, page 103).

The constitutional TREATMENT should be active and energetic, and such as is calculated to counteract or prevent inflammation of the brain. Give powerful cathartics, such as Podophyllin with Jalap, Senna and Cream of Tartar, or even more powerful drastics at first, such as Croton Oil (a simple formula for administering which, is—℞. Olei Tigl. gtt. x; Olei Anisi gtt. xx; Sapon. Castil. ʒj; Fiant pillul. xl. One of these pills every half hour until an operation, when Linseed or Castor Oil may be substituted and still freely continued).

Put the patient's feet in hot water, and apply cold to the head, with strong liniments and Mustard to the abdomen, legs and thighs. Cups along the course of the spine may do much good.

HÆMASTASIS, also, may aid in preventing the flow of too much blood to the head—(see Introduction, page 23). Apply ligatures round the arms and thighs, until all the superficial veins are distended, and keep them there for ten, twelve or even twenty-four hours, unless the patient become faint from too small a supply of blood to the brain and other vital organs (a result which may be brought on in other states of the system in an hour or less). When any faintness begins, loosen the ligatures a little and liberate a portion of the blood so confined from the general circulation.

No apprehension need be entertained of this operation, which, without the loss of a drop of blood, is equally as effectual as venesection in diverting for a time from the brain. Nor need any danger be apprehended from violent reaction when the ligatures are removed; for, as it is the venous and not the arterial system that is obstructed, the blood will be only gradually restored to other parts, and you can have its return as slow as you please, slackening the ligatures by degrees.

If there be no symptom of compression, all that is necessary is to DRESS as in any other case—first removing the hair, and for some distance round. Then wash out with warm water, and bring the lips together with adhesive straps and bandaging. Sutures may be necessary, but should be avoided, if possible.

But if SYMPTOMS OF COMPRESSION come on, or already exist and are not relieved by treatment, it may be necessary to trephine and elevate the depressed bone or remove the extravasated blood. The *symptoms* of compression are these—laborious and stertorous breathing; largely dilated pupils; pulse slow and regular; loss of motor power and of sensibility to stimuli, the limbs being loose and yielding; the urine retained and fæces discharged involuntarily. In rare cases the paralysis is confined to one side. There is *not*, as in mere CONCUSSION, nausea and vomiting. In the latter, too, the pulse is small and trembling, and the respiration easy; nor is the sensibility so far lost. But the symptoms of

Both concussion and compression may appear together, and the exact state of the case not be easily ascertained. In such circumstances, the safest plan is to wait, and use means calculated to relieve both states, until they subside or those of compression more clearly develop themselves.

Trephining, you must never forget, is attended, even in the most skillful hands, with much danger to the patient. If you have resolved on using the instrument, place it on such a part of the head as will, if possible, avoid the grooves for the middle meningeal arteries in the parietal and temporal bones, as well as the sutures, and have one edge of the trephine on the sound and one on the fractured bone. [For the mode of proceding with the operation, see "Trephining," Lecture LVIII.]

FRACTURE OF THE NOSE.

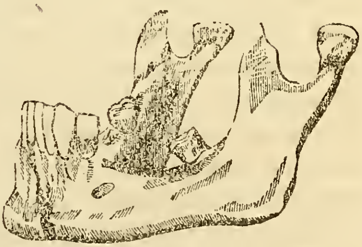
A violent blow upon the nose may not only break in the nasal bones, but the processes of the ethmoidal bone, and do great it not fatal injury by rupturing the membranes of the brain. Commonly, however, a nasal fracture is of trifling importance. It is readily distinguished by the *deformity* resulting, and almost as ~~easily~~ *adjusted* by applying some instrument (as a silver catheter or the smaller end of a gunshot probe) on the *inside* of the nose to push out the depressed bones, while the fingers on the *outside* support and keep them in their place.

The *surface* should be covered with cloths wet in cold water, or spirits of Camphor and water, to keep down inflammation and swelling. Adhesions and recovery will be speedy.

FRACTURE OF THE LOWER JAW.

This bone may be broken at any part. The accident most commonly occurs near the chin. The case is easily ascertained by the pain and crepitus on moving the bone, by the depression to be felt on tracing along the edge of the jaw with the fingers—which depression is apt to be greater on one side than on the other—and is also manifested by irregularity in the line of the teeth.

FIG. 67.



In ADJUSTING, elevate or depress until all the teeth are arranged in their proper place with respect to each other and those of the upper jaw. If, as often happens, the case is complicated with *dislocation* of one of the condyles, that must be first *reduced*, and the fracture then *set*. There is also almost always a good deal of contusion or laceration of the soft parts. For this reason, after the proper dressings, the parts require to be constantly wet with cold water or other refrigerant lotions. (See case, page 645).

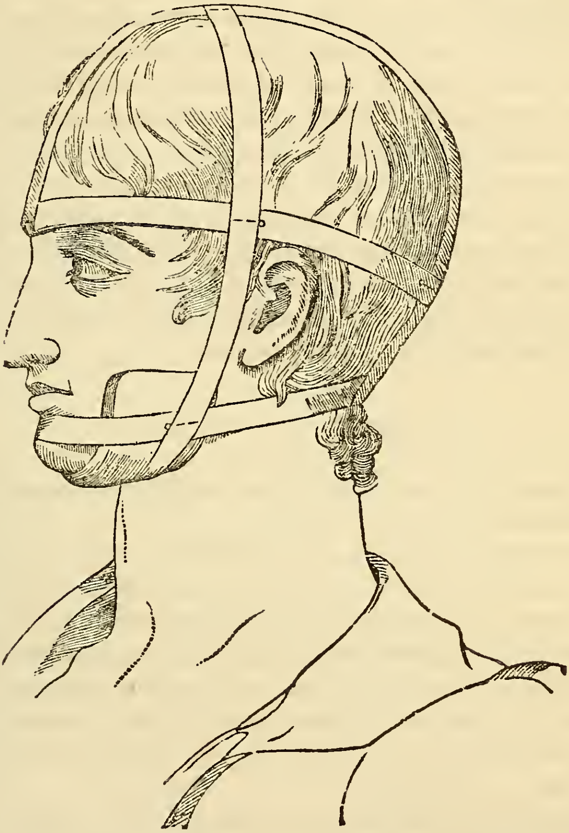
Secure the jaw after adjustment, by shutting the mouth closely and *keeping* it shut. Take a piece of stout calf-skin leather, about two and a half inches wide, and long enough to pass nearly or quite from ear to ear and over the chin. Spread upon this some good adhesive plaster, Beach's for instance, or Collodion, and stick it smoothly on. The gum shellac cloth would do still better than the leather, and less need of bandaging over it.

If no *teeth* are wanting in the fore part of the mouth, and there is not sufficient space between them, one or two will have to be *extracted* previously to closing the mouth, in order that there may be a space through which the patient by means of a tube, may take drink and food in a liquid form. As the patient may not like to lose a front tooth, one of the cuspids or the first of the bicuspids may be chosen.

The BANDAGE for securing the jaw may be of strong muslin or drilling, about two and a half inches wide and two yards long. It is to be split from each end to within six inches of the middle, where a small hole is made for the chin. The two lower ends are brought up over the top of the head, while the upper ones are carried horizontally round to the back of the neck. Several turns should then be made with each pair, some round the head horizontally, just above the superciliary ridge, and others over the crown. They should then be sewed or pinned together, not only at the ends, but wherever they cross. Several other modes are formally described in the books; but just as good or perhaps better plans will readily suggest themselves to the practitioner intent upon the simple object of fixing the bone in its place.

Professor Gibson's plan, represented in the accompanying plate (Fig. 68), is simple and effectual. A compress under each ramus is held by an assistant (to which, however, I much prefer the sticking leather) until secured by the first turns of the roller, (one and a half inches in width and four or five yards long). These first vertical turns are repeated over each other several times, and the horizontal ones above the ear over the occiput and forehead next follow; and then several others below the ear and lip. Pins or stitches should be applied wherever the roller changes its direction or the turns cross each other. The median strip over the top of the head, from the neck to the forehead, should be also fastened to each layer as it crosses. Its object is to keep the other turns from slipping.

Fig. 68



In the month of March last, a lad in this city was kicked by a horse in such a way as to occasion three distinct fractures of the inferior maxillary (as represented in Fig. 67), besides other complications. Several of the molars and one of the incisor teeth were knocked out; blood flowed freely from one ear; and there were signs of much cerebral implication. The face and head were very much bruised; the mouth could not be closed; the lower jaw being drawn back as well as down. Each condyle was broken, beside a fracture through the front of the bone. I was called about an hour after the accident, and with the patient's father (Dr. Carter) adjusted the parts, he pressing down and forward upon the fractured condyles, and I first aiding him with my fingers in the mouth, and then, when the mouth could be closed, arranging the front fracture and the teeth, bringing these on a plane with each other and parallel with those of the upper jaw. This done, an adhesive plaster was placed over the chin, and the whole secured by the *four-tailed bandage* (that first described, before giving Gibson's plan). The parts were kept constantly wet with the Salt and Camphor mixture; and an active cathartic given on account of the cerebral symptoms. These, with the bleeding from the ear, gradually ceased; the patient continued comfortable; and on the seventh day the dressings were removed for the sake of examination and readjustment. In about a month the cure was complete, leaving scarcely any perceptible deformity, and allowing the complete use of the joints and jaw.

FRACTURES OF THE SCAPULA.

These are very rare, except that which separates the acromion process.

When the BODY of the bone is fractured *across*, the parts remain so nearly in place as to cause no deformity. There is pain, however, and crepitus can be perceived on pressing the hand upon it. The TREATMENT in such a case consists in applying bandages around the thorax and over the shoulder so as to prevent all motion of the parts, keeping their surface wet and cool, placing the hand and fore-arm in a sling and keeping them very quiet.

FRACTURE OF THE ACROMION PROCESS is easily caused by a blow on the point of the shoulder. A *depression* at that point is very manifest, and the natural fullness of the deltoid muscle is wanting. The separated portion of the bone is, with the clavicle, *drawn downward* and forward by the sub-clavius and pectoralis major. When the *arm* is pressed *upward* crepitus may be noticed, but not when it is simply rotated.

To REMEDY this accident, press the head of the humerus up, so as to carry the fragment to its proper place, and fix the arm in that position by the "clavic bandage"—*omitting*, however, in this case, to place anything under the arm, as is done in frac ture of the clavicle.* The parts must be kept at rest and steadily fixed. (See under Fracture of the Clavicle.)

The NECK of the scapula may be so fractured as to involve only the glenoid cavity and the coracoid process, leaving the acromion entire. This case is apt to be confounded with a dislocation. As the long heads of the biceps and triceps originate from this portion of the scapula, those muscles retain it in contact with the head of the humerus, which is drawn down with it into the axilla, both by the weight of the arm and the contractions of the pectoralis major, latissimus dorsi and subscapularus. The head of the humerus can be felt in the axilla, as when it is luxated. The acromion process is very conspicuous, from a depression beneath. The deltoid is flattened and the arm elongated. Crepitus can be discovered and the nature of the case readily ascertained, by placing the thumb on the coracoid process and the fingers in the axilla, while the arm is pushed outward and upward.

The treatment in this case consists merely of putting the parts properly in apposition, and keeping them there, by the "clavicle bandage" with a wedge-shaped *pad* under the arm, so as to keep arm and shoulder both perfectly fixed and *immovable* until union takes place.

FRACTURE OF THE CLAVICLE.

This is a very common accident and easily distinguished. The "collar bone" usually gives way near the middle with an "oblique fracture," as in Figs. 69 and 70).) Passing the finger

FIG. 69.

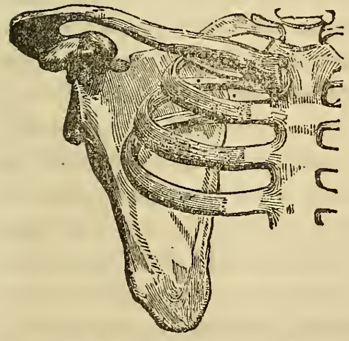
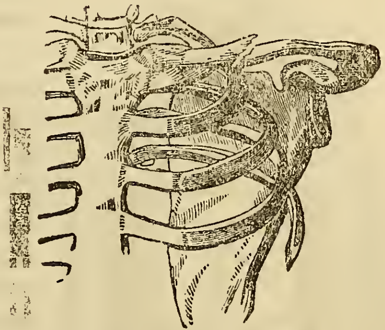


FIG. 70.



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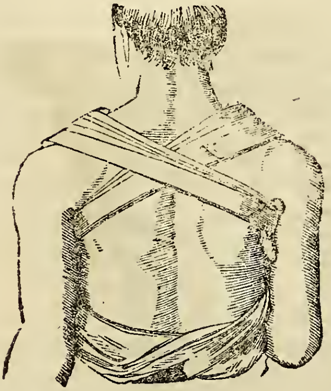
* I recently had an otherwise extraordinary case brought to me from the country, in which *both* the acromion and end of the clavicle were severed. It was an infant, the damage having been done by the accoucheur in bringing down the arm after "turning."

along the edge of the bone from the sternum, will readily show the point and direction of the split. A considerable tumor often forms at the place. Not unfrequently a spicula of bone will be found protruding through the skin, constituting the case one of "compound fracture." Crepitus occurs in moving the *shoulder*, which is drawn forward and inward by the contraction of the pectoral muscles.

In ADJUSTING this case, the surgeon stands behind the patient and puts his knee between the shoulders, drawing them *both* back until the parts of the broken clavicle have necessarily assumed their proper position. The shoulders are to be kept back, and the arms down by suitable apparatus. Before applying the "clavicle bandage, which I will presently describe, I am in the habit of applying a piece of leather tolerably stiff and spread with adhesive plaster, or the gum shellac cloth, well fitted to the surface. It should be over two inches wide, and extend from the middle or opposite side of the sternum to the point of the shoulder of the affected side. When this is stuck on, it should be covered, first with a compress and then the

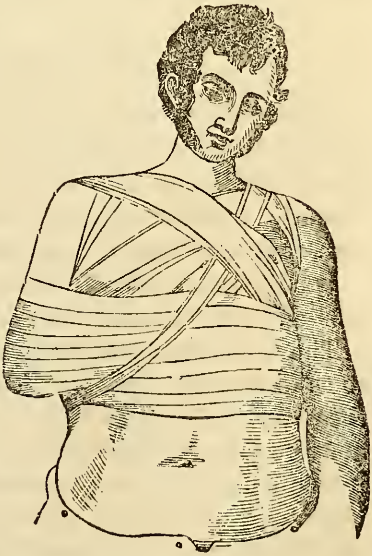
CLAVICLE BANDAGE, which is to be of strong muslin or drilling, about two and a half inches wide, and I may say unlimited in length. About a yard and a half from the end you intend to begin with, fasten to it a wedge-shaped *pad* (about six inches long, by four or five wide, and three thick at the base). Place the base or thick end of this compress uppermost in the axilla of the injured side. Have the shoulders kept back by an assistant, and bring the short end of the bandage across the back over the sound shoulder, which is to be protected by cotton at every point covered by the roller. Bring the end round in front of the breast to the pad, and there fasten it. Then begin with the other part of the roller. Bring it up over the breast and sound shoulder, and round the back to the axilla of the affected side; and repeat this operation four or five times, stitching the bandage to different points on the pad at every turn. Then bring it across the breast and under

Fig. 71.



the sound shoulder, and obliquely across the back to the top of the affected shoulder; then down in front of this, *under* its axilla, across the back again, and over the sound shoulder; down in front of this and under *its* axilla—then again over and under each as before—thus describing "figure 8" with the bandage on the back some six or eight times (see Fig. 71). Cotton pads are to be placed under and in front of the sound shoulder, and on the top of both, to prevent excoriation. Continue the bandage again from the axilla of the sound side across the back and *over* the affected arm, bringing the elbow down to the side as near as may be, while the forearm is flexed over the breast, so that the ends of the fingers will reach to, or nearly to, the coracoid process of the sound side. Thus make six or eight folds round the body, including the arm in each. Then lay the roller again over the sound shoulder, across the back and round the body, over and below the elbow on the breast, and up in front over the sound shoulder. Make five or six of these oblique turns, and fasten your bandage. Also, stitch the successive folds of the roller, as they overlap each other from the shoulder down below the elbow, and up along the forearm, so that they may not possibly slip up or down. Next, having covered the affected clavicle with a compress laid over the plaster, confine it with your bandage, brought round from under the sound arm, and obliquely across the breast over the affected clavicle and the shoulder above. Six or eight of these turns complete the operation, so as to keep everything smooth and firm.

Fig. 72.



The modes of applying the bandage laid down in most of your books, do not seem to me as efficient as this, which I can recommend from experience. It has always fully realized my expectations. One very severe case, where the fractured clavicle protruded through the skin, fell into my hands, in this city, a few years ago. It was adjusted in the way I have described to you; and so complete was the cure, that not a trace of the accident can now be discovered, except a slight scar where the surface was broken through. The surface of the united bone is as smooth as on the opposite side.

The *advantage* of applying the bandage in the way recommended, is, that if there be any external wound, it can be dressed—or the part can be examined, if there be occasion for it—without so far removing the bandages as to cause any derangement, or indeed allow of the least motion. The clavicle itself, though secured by plaster, position, etc., was the last part bandaged (which the front view of Figure 72 was intended to represent). This precaution should never be lost sight of.

Any *constitutional symptoms* arising in such a case should be met by the proper remedies. In ordinary cases all that is necessary, if anything, in the way of medicine, is a moderately brisk cathartic. Rest for a few days should be enjoined, though with the straight-waistcoat-like protection of the properly adjusted bandage little risk is incurred. Union of bone will take place much quicker at this central part of the body, than in the extremities. Two or three weeks will generally be long enough to keep on the apparatus. Of this, however, the practitioner must judge for himself in every case.

Fracture of the Sternum.

This accident never happens, except from very great force applied directly to the part. It is important on account of the great liability of inflammation extending to the pleura and thoracic viscera. It may always be considered a dangerous case, requiring careful management.

Its SYMPTOMS are a depression at the point of the fracture, with pain and crepitus accompanying the movements of respiration.

The TREATMENT consists in applying a *roller* round the chest so as to *stop all motion*, causing respiration to be carried on by the *abdominal* instead of the intercostal muscles. Inflammation must be guarded against by the use of diaphoretics, counter-irritants to the surface, revulsives to the feet and legs, and by brisk and frequently repeated cathartics. Keep the patient very quiet, and cold water constantly applied to the injured part.

FRACTURE AND DISLOCATION OF THE RIBS.

I take up these cases together, because, though fracture of these bones occurs without dislocation, dislocation can rarely, if ever, take place without fracture. It is supposed that simple dislocation may occur at the vertebral extremity, but any force capable of producing it, would be almost certain to break off the transverse process of the vertebra, if not to fracture the rib itself. What is called

"Dislocation of the *cartilage*" from the rib or sternum, is, in fact, a rupture or fracture. There is no joint or proper articulation there to be dislocated, and the *symptoms* are simply those of fracture at any other part.

As the accident is generally CAUSED by some severe blow or heavy force at the point of fracture, the patient will direct your attention to that point, where by tracing along the rib with your finger, you will discover the *depression* and *crepitus*. If the cartilage be torn from the rib it will generally project.

In TREATING these cases, direct the patient to take a long inspiration, and then hold his breath for a short time with the lungs well filled. In this expanded condition of the chest, press the bones or cartilage down to the proper place, and fit on the part a piece of wetted paste-board, or what is better, of the gum shellac cloth (see under Hip Disease, page 190). Let it be long enough to extend one-third of the way round the chest, and wide enough to cover one or two ribs on each side of the broken one. Adhesive plaster may be spread on the cloth, though this is not indispensable, as it will be kept in its place by the roller. The plaster, however, may in some cases tend to prevent the ribs sinking in when the lungs contract. The proper motion of the ribs, however, being only upward and downward, when this is prevented, and the divided ends are in apposition, any inward tendency could only press them more firmly together. For greater security against any shrinking,

Let your *bandage* be *of flannel*. Pass it round the chest, from the arm-pits to the lower end of the sternum, so as to prevent all motion of the ribs in respiration.

UNION will take place, in ordinary cases, in the course of two or three weeks. The bandage may therefore in such cases be dispensed with after that time. The plaster should be kept on a few weeks longer.

Fracture of the Spine,

By which is meant the *Spinal Column*, or fracture of the *body* or *articulating* surface of a vertebra—is beyond the reach of remedial surgery. The *transverse* processes of the vertebræ may be broken off in connection with fracture or dislocation of the ribs, without any special inconvenience or danger. It is regarded and *treated* altogether as an accident of the ribs. Fracture at most parts "of the spine," then, is very soon fatal, though in some rare instances patients have survived a long time after having the *lumbar* vertebræ broken. Fractures at any higher part cause death in a few days—above the fourth vertebra of the neck, *instant death.*

Paralysis of all the *voluntary* muscles, supplied by nerves proceeding from the spinal column below the point of fracture, is a necessary consequence, even where the organic functions are not immediately affected. Thus, when the lumbar vertebræ or any higher ones are split, the bladder and sphincter ani are paralyzed, and the urine and fæces pass involuntarily.

All that can be done in the way of *treatment* is to counteract inflammation, and keep the patient as quiet and comfortable as possible so long as he may live. Neither medical nor surgical aid is of much avail.

Fractures of the Pelvis.

These are only caused by very great violence, usually crushing in some part of the parietes of the pelvic cavity, and often proving fatal from concomitant injury to the organs within. Such injury may be done at any part of the basin. The acetabulum is among the most dangerous points. Separation or dislocation at the sacro-iliac junction may be also mentioned in this connection.

The symptoms will of course, vary somewhat with the part fractured. The principles, however, on which diagnosis and treatment are conducted will be the same. *Crepitus* can generally be *felt* by placing the hand upon the crest of the ilium, on one or other side while motion is made with the lower extremities or at the spine. Or *auscultation* may be resorted to at the suspected point. The patient can seldom move the hips as he lies in bed, without experiencing great pain. Any movement of the body is likely to cause more or less suffering. Firm contraction of the abdominal muscles generally tends to separate the fractured parts and thus aggravate all the symptoms.

Permanent injury, as well as present suffering, may be produced by moving the patient much for the sake of examination. Therefore, the less the parts are meddled with the better. *Diagnosis* may be aided by learning the kind of accident, and the amount and direction of the force applied.

The first thing to be done, both with a view to EXAMINATION and TREATMENT, is to place the patient, as gently as possible, in a horizontal position. We are then directed to observe, with as little handling as we can, whether the legs, the spinous processes of the ilia, and other prominent points on each side compare. If there is deformity discovered, making a fracture probable, before going any further with the examination,

Introduce a *catheter*, to ascertain whether the urethra or bladder be involved in the injury. Should there be bloody urine, or any obstruction to the advance of the instrument, let it remain in the bladder, or as far toward it as it has gone, and proceed at once to

Apply a roller round the pelvis in such a manner as to keep all the bones in proper juxtaposition. Then have a *strap* passed *under the nates*, and attached to a pulley suspended over the bed, so that the pelvis may be raised without any muscular effort on the part of the patient.

All possible precautions, topical and general, must be taken against inflammation. Cold water applied to the parts, with mild but active cathartics, may do much good.

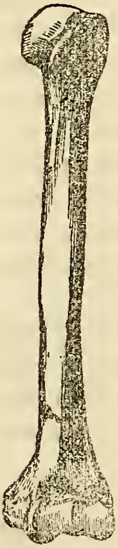
If, however, the injury be severe, but little hope of saving the patient can be held out.

LECTURE L.

PARTICULAR FRACTURES CONTINUED—THOSE OF THE UPPER EXTREMITIES.

OF THE HUMERUS.

FIG. 73.



THIS bone is generally broken near the middle: it may, however, give way near the condyles, or just under the head, in the part called (in surgery) the neck—(see Figures 74 and 76).

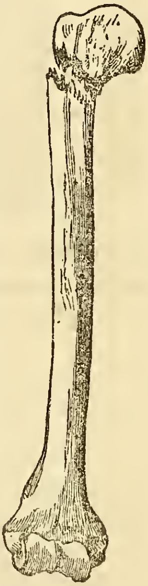
A fracture in any part of the SHAFT of the bone (as in Figure 73) is easily detected. There will be obvious deformity, the parts of the bone being drawn out of a line by the different muscles. The patient feels more or less pain at the fractured point, and is unable to use the limb. By rotating the lower portion of the arm, while the upper is fixed, crepitus can generally be noticed; and the direction and extent of the fracture can easily be ascertained by the touch, on tracing with the finger from the condyles upward.

Fracture or the NECK (Figure 74) is not always easily distinguished from a *dislocation*. It may be borne in mind, however, that it is an accident which seldom occurs, except in old persons. In the fracture, the roundness of the shoulder is not lessened, as when the head of the bone is out of place. Crepitus will always decide the point. By taking hold of the arm below and rotating, the grating of the fractured portions on each other may be felt, if not heard.

Fracture at or near the CONDYLES (one form of which is also represented in Figure 73 and another in Figure 76) may be mistaken for *luxation* from the fore-arm. The use of the elbow joint will aid in the discrimination. Let the elbow be fixed, and rotation of the hand will seldom be much impeded in mere fracture, even when the condyles are broken off or have a fissure between them. If the fracture be just *above* the condyles (Fig. 76), as usually happens in the case of children, the arm will be shortened. Crepitus will be decisive.

The TREATMENT, when the *shaft* of the bone is broken, is simple. The proper extension has first to be made, by drawing upon the wrist or elbow; and the adjustment then accomplished, by comparing the length and appearance of the limb with its fellow. If it be an *oblique* fracture, great care must be taken not to let the ends of the bones slip by each other, and thus render the arm permanently shorter. The muscles naturally tend to bring about this result.

Fig. 74.



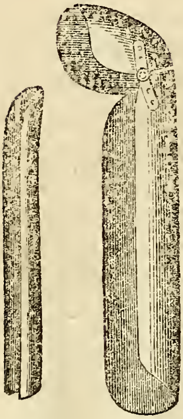
Have the parts held, when once in proper juxtaposition, by an assistant, while a *roller* is applied, rather loosely, from the elbow to the shoulder. Then place on four *splints* about a quarter of an inch thick, and of a convenient width, so as to cover nearly the whole surface of the arm. Let them be nearly as long as the humerus itself, the inner one being a little the shortest, so as to allow the elbow to be bent. Then continue your roller, bringing it down again over the splints from one end to the other a sufficient number of times to fix them firmly to the arm, and prevent any motion or contraction of the muscles.

The fore-arm and hand must be suspended in a *sling* from the neck. It is best to have one of the splints extend from the shoulder to the back of the hand, it being bent to a right angle at the elbow, and secured by the roller being brought down to the hand. This will more effectually protect the arm, by preventing rotation and all other motion of the fore-arm. This splint, and all the others, may be of gum shellac cloth, two or three thicknesses being stuck together.

Some recommend the roller in the first instance to be carried *from the fingers* up to the shoulder, so as to allow of its being rolled very tight, preventing all motion below and paralyzing the muscle above. This, however, is not necessary in ordinary cases.

If there is much *contusion*, cold water, or spirits and cold water, should be applied, and the parts kept wet for some time.

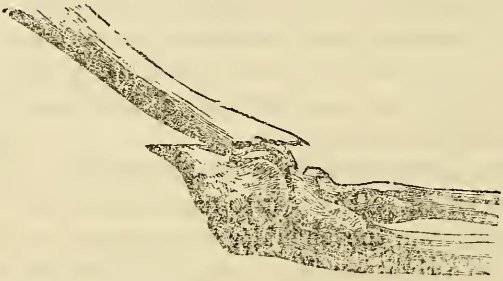
Fig. 75.



When the *neck* of the humerus is fractured (as in Fig. 74) the parts are to be kept in their place after adjustment, by a wedge-shaped pad in the axilla. The *shellac splint* should then be applied on the outside and over the top of the shoulder, and the whole firmly fixed by the clavicle bandage (see page 19). The gum shellac cloth is to be spread with adhesive plaster and extend from the neck down near to the elbow, and be wide enough to envelop the whole shoulder and two-thirds of the surface of the arm. Those not yet acquainted with this excellent preparation, have to trust wholly to their "clavicle bandage." Fig. 75 represents the Welsh splint for dressing this fracture.

For fracture just *above the condyles* (Fig. 76), after the proper extension and juxtaposition, apply a roller loosely around the arm and forearm, and afterward fix on with it two angular splints, one in front and the other to the back of the arm, reaching nearly from the shoulder to the wrist. Prevent all motion both of the arm and forearm, and suspend the latter in a sling. Here again the shellac cloth makes the best possible splint.

Fig. 76.



In true "fracture *of the condyles*" (see in Fig. 73), the shellac cloth should by all means be used. The divided parts are to be pressed together and the splint or cloth cap smoothly stuck on. Let it reach to the wrist. In about eighteen or twenty days remove the first splint, and substitute another, bent about half as much, and take the opportunity of making a little passive motion of the arm backward and forward. Keep this on for two or three weeks, and then apply a still straighter one. After this, remove the dressings every two or three days and move the joint a little.

More or less *deformity* is liable to occur in this case, as well as in the preceding, in spite of the best management. This should always be made known to the patient or friends, in order that censure for bad surgery may not be incurred.

More suits to recover damages on the ground of alleged mal-practice arise, after fractured condyles have been treated, than from any other injury. In fact, few physicians will undertake to treat a fractured condyle without a guarantee on the part of the patient and his friends that they will not commence a suit in case the elbow is stiff, or any other defect remains.

As the dangers of partial or complete anchylosis after fracture running into a joint, are so imminent, it is well for the surgeon to explain to the patient, in the presence of competent witnesses, the nature of the injury and the obstacles in the way of a perfect result. The explanation is particularly necessary to correct a prevalent error among the ignorant, that a medical man can and ought to so adjust a fractured bone, once for all, as to insure a union perfect in every respect.

While I would impress upon every practitioner the importance of fortifying himself against vexatious law suits, I am not disposed to sustain in mal-practice every adventurer in the responsible art of bone-setting. There is reason to believe that certain state and county societies and combinations of medical men, are gotten up more for the purpose of *cloaking* professional faults and blunders, than for the advancement of humanitary schemes. Members of such associations talk unceasingly about *the interests of the profession*, as though they were identical with the great truths of science.

Treatment.—The diagnosis having been distinctly made out and a guarded prognosis given, the displaced parts are to be adjusted preparatory to the dressing. It may be remarked, for those unacquainted with such injuries and are inclined to give every limb supposed to be fractured a *severe pulling* before it is dressed, that in simple fracture of a condyle, unaccompanied with dislocation, very little displacement exists; therefore extending and counter-extending forces would be entirely unnecessary and cruel.

Another suggestion may not be inappropriate in this place. Let no practitioner who attempts to manage fractures, neglect through sympathy, indecision or ignorance, to handle the injured limb sufficiently to establish a correct diagnosis. Grasp the patient's wrist with one hand and make moderate extension and rotation, while with the other the elbow is manipulated for the purpose of adjusting any displacement, and determining when the limb is ready to receive the dressing. All this having been accomplished, it is well to place a bandage on the arm, beginning with the roller at the hand and continuing it upward until the entire arm is slightly enveloped. This bandage is not absolutely necessary, but it holds the muscles steady, tends to obviate swelling, and serves as a cushion on which the remaining dressing is to rest.

To complete the dressing, an angular trough of woven wire constitutes, perhaps, the best retentive apparatus that can be used. It answers all the purposes of the angular carved splints, and at the same time allows of free ventilation. As woven wire splints are now familiar to the profession, a description of them is not necessary.

After the fifteenth day, the arm is to be taken from the splint every day, and the elbow gently exercised in flexion and extension, to obviate anchylosis. After the twentieth day—a time when the osseous reparative material begins to be supplied—the passive motion should be practiced twice a day. At all other times the arm may rest in the wire trough until the fragments are sufficiently united with the bony matter to be out of danger of displacement.

Instead of a wire apparatus, pieces of a cigar box or splints of thin board may be laid upon the first or enveloping bandage, above and below the elbow (bent to a right angle), and these held in place by the turns of a roller. I have often dressed the arm in this way, commonly using a bent piece of pasteboard on the front part of the limb. Thick pieces of pasteboard or strips of sole-leather, cut and molded to the arm, constitute excellent splints. Fig. 78 represents an excellent dressing.

The seat of the injury may be kept wet with Whisky or an anodyne fluid. The application performs a double office. It serves to keep in check a too high grade of inflammation, and to assure the patient's mind that all is being done which well can be.

At the end of four or five weeks, when the dressings are hrown off, considerable rigidity in the elbow-joint may be expected, even if anchylosis proper has not taken place. The forearm, too, may have its usual rotation restricted. To restore normal motion and pliability to the limb, the patient or his friends must, several times a day, put the arm through all its customary movements.

I have never failed to secure free motion of the elbow-joint after fracture of the condyles, except in one instance. In the exceptional case, several fragments of the lower extremity of the humerus had been produced by a crushing force. Some motion was preserved in this case, even enough to allow the patient to carry his hand to his face and into his pocket. I have seen cases of anchylosis more or less complete, that resulted in other hands which undoubtedly were as dextrous as mine.

A great deal can be accomplished toward restoring the natural motion to the joint, even several months after the healing process had been performed. The forearm is to be held firmly flexed for a few minutes, and then extended in the same manner, repeating the process two or three times a day. The pressure excites absorption, which removes the extraneous bony and other matter thrown out in the process of repair. Efforts to improve the condition of a partially anchylosed limb should not be relaxed for several months, or till all is accomplished that may be.

For fractures about the elbow, surgical writers usually advise that the limb be dressed with the joint at different angles, to obviate stiffening. Splints joined with a hinge—some of which are figured with a screw to change the angle at will—have been recommended. In practice, I have never found any advantage to arise from these complicated contrivances, and believe that they tend to detract from the importance of performing passive motion during the healing process.

Fractures of the Ulnar Processes.

The Olecranon Process

Is sometimes broken off and drawn up on the back of the arm, leaving a depression between it and the joint (see Fig. 77). If, however, the ligaments be not ruptured, little or no retraction may take place. There is great pain at the part, and the patient is unable to straighten his arm, though he can bend it easily.

In TREATING this accident, the first thing to be done is to place the limb in a straight position, and use means to subdue inflammation and swelling, if any have occurred. After that bandage the forearm pretty tightly from the *ends of the fingers* to the bend of the arm. Then bring down the fractured end of the bone to its proper place, and include it in the turns of the roller, which should be continued at this time for some three or four inches further up. Bring back the roller and pass it above and below the joint in the form of a figure 8 for ten or twelve turns. After that turn it round the arm again and continue upward, including all the upper portion of the arm in order to prevent the contractions of the triceps from again separating the parts.

FIG. 77.

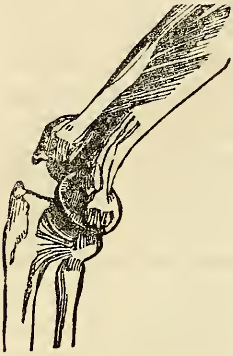
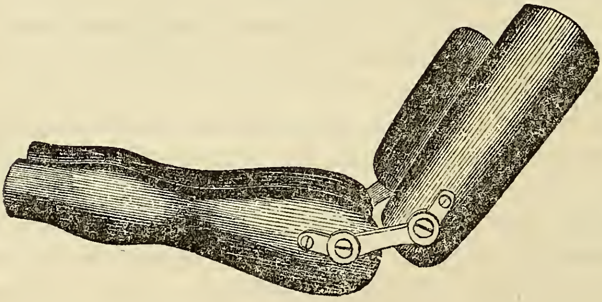


FIG. 78.



Place over the bandage, in front of the joint, a strong splint, in order to prevent all flexion, and keep the joint constantly wet with cold water.

After from two to three weeks, passive motion of the joint should be commenced, and continued from day to day, increasing the extent and amount as the patient can bear it.

This is a case in which ossific union does not take place, there being only a ligamentous attachment formed.

The cause of this accident often occasions laceration about the parts, and renders the case one of

"*Compound fracture*," when great care must be taken to prevent dangerous inflammation. Fomentations and poultices may be needed. After adjusting and bandaging as above directed, keep the parts constantly wet in cold or moderately cool water. The tincture of Arnica or Hypericum will be a great aid in allaying or preventing inflammation (see pages 72 and 82).

The bandage must, in this case, be so applied as to be removed from the wound in dressing it, without the necessity of removing the splint or the bandage from the arm above. Any external wound is to be treated as in similar cases unconnected with fracture.

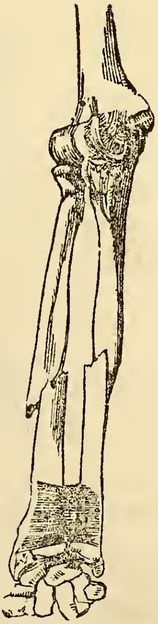
The Coranoid Process

Of the ulna may be separately fractured, though this is very rare. It occasions a difficulty of bending the elbow, as the action of the brachialis upon the fore arm is lost. There is also, almost of necessity, a backward dislocation, the coronoid process being nearly all that prevents the triceps extensor drawing the ulna backward and upward.

All the necessary TREATMENT is to flex the forearm and retain it in that position by splints and bandages.

This fracture also unites only by ligamentous connection.

FIG. 79.



FRACTURES OF THE FOREARM.

The radius and ulna may both be broken through, or either of them alone (see Figures 79, 80 and 81). These common accidents may be ascertained by *tracing* the bones from the wrist up, until when the finger comes to the divided part a *depression* is felt; by the *crepitus* on fixing the elbow and rotating the wrist; and by the pain, and more or less loss of motion in the hand.

The only point of TREATMENT that is not obvious, is the precaution of keeping the bones apart, so as to prevent their being drawn into the interosseous space (by the pronator and supinator muscles, and particularly the quadratus, which having a special direct tendency to this result, from its fibers running perpendicularly across the bones, is represented in Fig. 79, near the wrist). The bones thus uniting, would for ever prevent the circular movement of the radius round the ulna, and the full use of the hand. After adjusting the fracture by extension from the wrist, bend the arm at a right angle, having the thumb directly above the little finger, that is, mid way between pronation and supination. Then apply a roller loosely, and over it two splints, one from the internal condyle to the palm of the hand; another on the outer side, from the external condyle to the back of the wrist. These splints should be convex on the side next the arm, and padded with cotton, or have a cotton compress laid beneath them, between the bones, so as to press into the interosseous space. After this matter is attended to, secure the splints by a roller, extending from the hand to the elbow.

If the *radius alone* is fractured (Fig. 80), it is best to leave the *hand* loose, so as to let it drop down, and thus exert some force of extension on the bone. But in fracture of *both* bones (Fig. 79), or of the *ulna alone* (Fig. 81), let the splint and bandage extend to the ends of the fingers, keeping the hand and forearm in the same line.

Fig. 80.

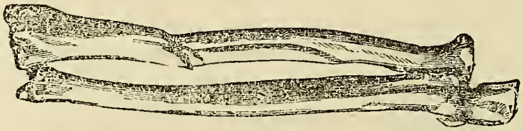
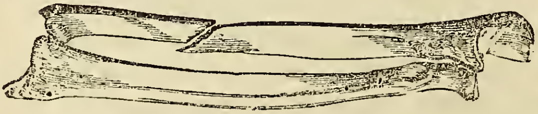


Fig. 81.

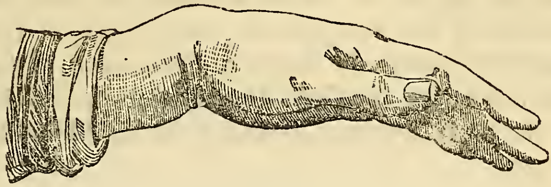


After ten or twelve days the splints may, in ordinary cases, be removed, and a starched bandage applied; but care must still be taken that the bones be not forced together. To prevent this, a *compress* had better be put along the interosseous space, at least along the front of the forearm.

The Lower End of the Radius

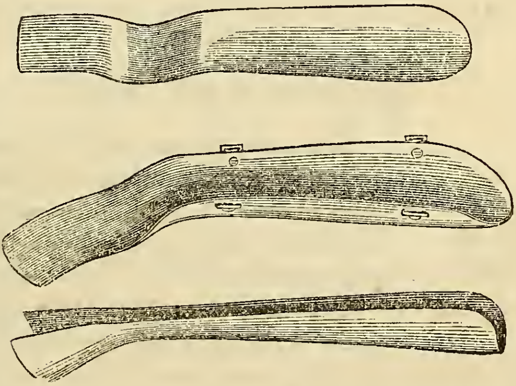
May be fractured at about half an inch or still less from the joint. As the hand is *distorted*, it is apt to be mistaken for a luxation. If the hand be moved, however, the styloid process of the radius moves with it, which, of course, would not happen if the bone were dislocated.

FIG. 82.



TREATMENT should be the same as for other fractures of the same bone, except that pads and compresses must be so placed as to aid in keeping the fractured portions together as well as the two bones apart.

FIG. 83.



The patient must be forewarned that he will not be able to use the hand to any considerable extent for several months. To prevent anchylosis, however, *passive* motion must begin to be made in three or four weeks.

FRACTURES OF THE WRIST, HAND AND FINGERS.

The carpal, metacarpal and finger bones are occasionally broken. The case is an obvious one; and the TREATMENT required is to apply a broad *splint* so cut as to fit the front of the wrist and hand, with the ends slit for the fingers. Splints may be also applied to the back and sides of the fingers. Pad the parts so as to make the pressure equal, and secure the splint with a roller. Should only a finger be broken, it may be set and fixed by four small splints and bandaged with tape; but it will be better and safer to have the whole hand and wrist secured up to the middle of the forearm as above directed.

When the carpal or middle metacarpal bones, or the two middle bones of the first phalanx, are the seat of the injury, it is best to have padding in the palm of the hand, quite thick and round, bending the hand and fingers over it, as this will serve to keep the parts properly extended, acting like a ball grasped in the hand.

LECTURE LI.

PARTICULAR FRACTURES CONTINUED—THOSE OF THE LOWER EXTREMITIES.

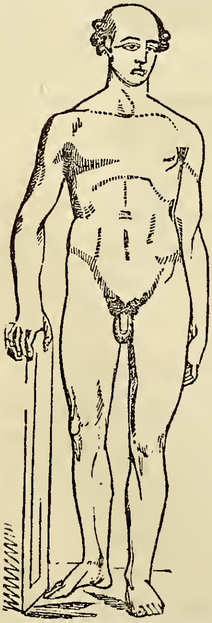
FRACTURES OF THE THIGH.

THE NECK OF THE FEMUR is rarely broken, except in old persons, and oftener in females than males. The fracture generally occurs within the capsular ligament, but may happen outside of it.

The SYMPTOMS by which the accident may be recognized are that the patient can not stand on the leg, and feels severe pain on moving it. The limb is from one to two inches shorter; the foot and knee are turned out (as seen in Fig. 84), and the heel inclines to rest on the other limb just above and behind the malleolus. On extending or rotating the limb crepitus may be felt or heard. If extension be made and the limb let go, it retracts suddenly.

There are *varieties*, however, to be distinguished. When the whole of the bone is not detached, no contraction takes place. In other cases the shortening does not

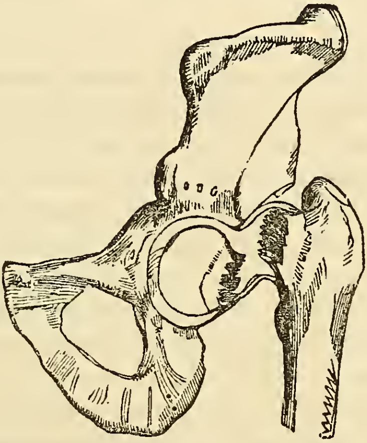
FIG. 84.



occur for several hours and even days after the accident. In rare instances, also, the foot *turns in* instead of out. "The practical rule," observes Mr. Druitt, "is that when an old person has fallen and is unable to walk and complains of pain under the hip, this fracture should be carefully looked for, though there may be no apparent shortening or eversion."

A fracture *within the capsular ligament* (Fig 85) very rarely *unites* by bony connection. Either a strong ligamentous substance has to bind the parts together and serve instead of bone, or there is no *fixed* union at all. In the latter case a sort of "double joint" is formed, the fractured surface of the head becoming hollowed into a socket, and that of the neck rounded so as to play into it. The ligaments of the joint become greatly thickened and strengthened, as is also the case with the obturator externus muscle. The limb in this case is permanently shortened, causing halting in the step.

Fig. 85.



TREATMENT.—Sir Astley Cooper, after giving some half dozen different modes of management, thus concludes:

"Baffled in our various attempts at curing these cases, and finding the life of the patient occasionally sacrificed under the trials made to unite them, I should, if I sustained this accident in my own person, direct that a pillow should be placed under the limb throughout its length; that another should be olled up under the knee, and that the limb should be thus rextended until the inflammation and pain had subsided. I should then daily rise and sit in a high chair, in order to prevent a degree of flexion which would be painful; and, walking with crutches, bear gently on the foot at first, then gradually more and more, until the ligament became thickened, and the muscles increased in their power. A high-heeled shoe should be next employed, by which the halt would be much diminished. Our hospital patients, treated after this manner, are allowed in a few weeks to walk with crutches; after a time a stick is substituted for the crutches, and in a few months they are able to use the limb without any adventitious support."

"The degree of recovery in these cases is as follows: If the patient be very corpulent, the aid of crutches will be for a long time required; if less bulky, a stick only will be sufficient; and where the weight of the body is inconsiderable, the person is able to walk without either of these aids, but droops a little at each step on that side, unless a shoe be worn having a sole of equal thickness to the diminished length of the limb. In every case, however, in which there is the smallest doubt whether it be a fracture within, or external to the ligament, it will be proper to treat the case as if it were external—a fracture which admits of ossific union."*

I am informed that Jarvis' patent *Adjusting Machine* has in numerous cases been used with perfect success. I have never tried it in one of these cases, but am inclined to believe it would be superior to any other means yet made use of or proposed. In the absence of this machine, I would recommend straps of the *shellac cloth*, in addition to the directions quoted above from Sir Astley Cooper. The shellac splint I would use, should extend from near the knee up to the thorax, being about four inches wide, and consisting of several thicknesses of the cloth. After having adjusted the fracture as well as possible. and shaped the gum splint while warm, spread it with adhesive plaster and fix it with bandages on the thigh and body.

To subdue the inflammation, fomentthe part and give an active cathartic and diaphoretics.

If the practitioner wishes to try other modes of treatment, he can find them described in any of the books. None of them, however, have been attended with any better success than Sir A. Cooper's simple plan, while they often do great harm.

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* Dislocations and Fractures, p. 142.

Fracture of the *neck outside* of the *capsular ligament*, differs in some of its symptoms from the former case. It may also occur at any age, while fracture within the capsule rarely if ever happens in persons under the age of fifty. Crepitus in the case of external fracture is much more easily distinguished, while the limb itself is not so much shortened or everted. The pain and swelling are greater and often become excessive, with attendant constitutional symptoms. In the intra-capsular fracture, there is but little symptomatic fever after the first few days.

Union by *ossification* will in this case take place in healthy young or middle aged persons, and even in those of a more advanced age whose constitutions are very robust.

The TREATMENT therefore should be such as will keep the parts properly in contact. The length of the limb must be preserved, and the trochanter pressed inward. Jarvis' apparatus is well adapted to this purpose. I should simply recommend it as the best I have seen, and say nothing about any other means, if it were not too expensive for all practitioners to keep.

Of the *various methods* devised for fulfilling the proper indications, and described in detail by surgical writers, I may remark that no two of them agree in recommending any one as the best. As I consider the two plans of the great—and great because *practical*—English surgeon to be as effectual as any, and better than most, inasmuch as they are simple and cheap, I shall here also take the liberty of repeating his directions in his own language.*

"In the TREATMENT of this injury the principles are to keep the bones in approximation, by pressing the trochanter toward the acetabulum, and to preserve the length of the limb. The foot and ankle of the injured side should be firmly bound with a roller to the foot and ankle of the other leg, and thus the uninjured side will serve as a splint to that which is fractured, giving it a continued support, and keeping it extended to the proper length." (That is, of course, on the presumption that the sound limb itself is *kept* straight, though nothing is said by our author, or others, of preventing *both* limbs being drawn up together). "A broad leathern strap should also be buckled around the pelvis, including the trochanter major, to press the fractured portions of the bone firmly together; and the best position for the limb is, to keep it in a straight line with the body.

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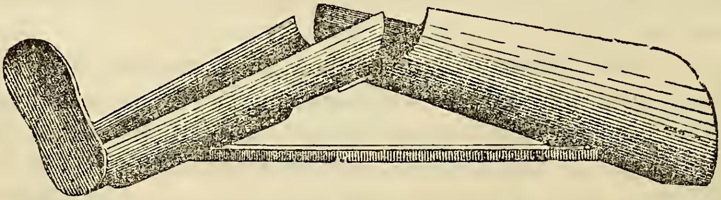
*Sir A. Cooper's Dislocations and Fractures, p. 151-2.

"The following plan I have also found successful: The patient being placed on a mattress on his back, the thigh is to be brought over a double inclined plane composed of three boards, one below, which is to reach from the tuberosity of the ischium to the patient's heel, and the two others having a joint in the middle by which the knee can be raised or depressed; a few holes should be made in the board, admitting a peg, which prevents any change in the elevation of the limb but that which the surgeon directs; over these a pillow must be thrown to place the patient in as easy a position as possible.

"When the limb has been thus extended, a splint is placed upon the outer side of the thigh to reach above the trochanter major, and to the upper part of this is fixed a strong leathern strap, which buckles around the pelvis, so as to press one portion of the bone upon the other; and the lower part of the splint is fixed with a strap around the knee to prevent its position from being altered. The limb must be kept as steady as possible for many weeks, and the patient may be permitted to rise from his bed, when the attempt does not give him much pain; he is still to retain the strap which I have mentioned round the pelvis, and by this treatment he will ultimately recover with a useful though shortened limb."

Fig. 86.*



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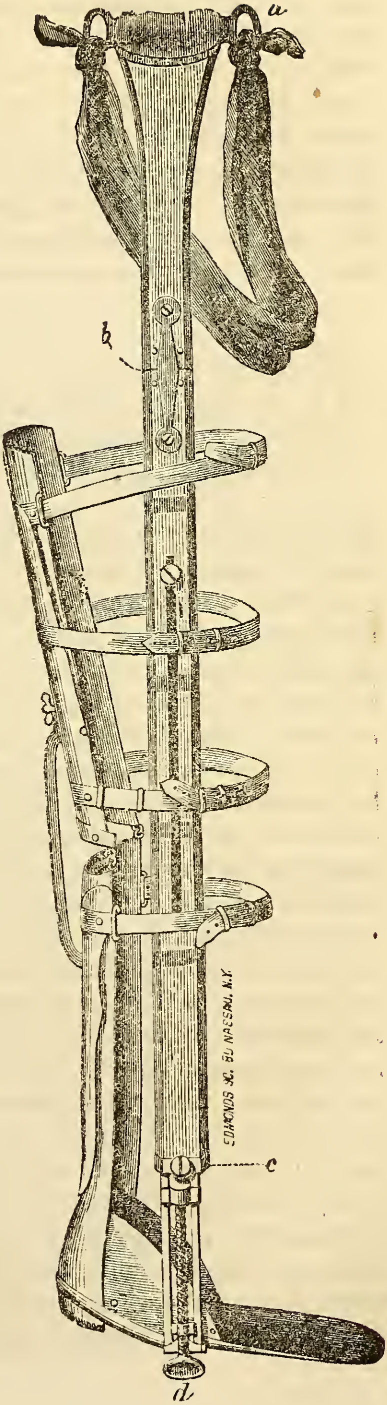
*This is simply made of two pieces of soft light wood, such as bass wood, pine or poplar, hollowed out smooth, as a half socket, respectively for the leg and thigh, and joined at the knee with a common butt-hinge. A foot-board is firmly screwed on the lower end. A square stick is fastened by another hinge to the thigh-piece, and has a groove and holes in its lower end to fit over a projection at the back of the leg-piece. In this are several corresponding holes, by which the two are pinned together, thus flexing the limb as little or as much as is desired.

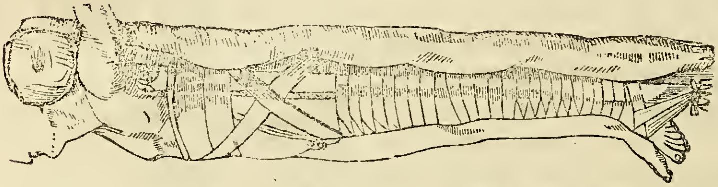
The concave Double Inclined splint recommended by Dr. Beach will be found—with the addition of a foot-board which I have taken the liberty of adding (see Fig. 86)—a better apparatus for fixing the thigh bone than the plain boards of Sir A. Cooper. Fig. 89 represents the Welch Splint for fracture of the femur.

FIG. 87



As these are cases of great importance, and frequently occasion much trouble, I will give another plan, which is simple, and will answer the purpose very well. Mr. Liston in describing his favorite mode and means of adjustment thus speaks: "Whether the fracture is suspected to be within or without the joint, either entirely or partially, the broken surfaces are to be brought in contact and retained immovably in apposition for a time sufficient to admit of union. The limb is put up in apparatus not requiring removal and but little adjustment. This can be effected only in the extended position. Many splints, with foot-boards, straps and screws, are intended for this purpose, some to be attached to the injured limb, others to the sound one; but the apparatus which is most simple and easily to be *procured at all times and in all circumstances*, is at once the best and most efficient. This is a straight wooden board, not so thick as to feel cumbrous, and not so thin as to be pliable or easily broken; in breadth, corresponding to the dimensions of the limb; in length, sufficient to extend from two, three or four inches beyond the heel, to near the axilla; deeply notched at two places at the lower end, and perforated by two holes at the upper. The splint well padded, is applied to the extended limb, the ankles being protected by proper adjustment of the pads. The apparatus is retained by bandaging—(see Fig. 88).

Fig. 88.



A common roller is applied round the limb, from the toes to near the knee, so as to prevent infiltration, which would otherwise follow pressure above by the rest of the apparatus. The splint is then attached to the rest of the limb by involving both in a roller from the foot to above the knee; and, in doing this the bandage, after having been turned round the ankle, should be passed through the notches, so as to be firmly attached to the end of the splint, thereby preventing the foot from shifting. A broad bandage is applied around the pelvis, over the groin and down the thigh, investing all that part of the limb left uncovered by the previous bandaging. A broad band, like a riding belt, is fastened round the pelvis, so as to bind the splint to the trunk, and thereby keep the broken surfaces of the bone in contact. A large handkerchief or shawl is brought under the perineum and its ends secured through the openings at the top of the board. It is evident that the splint being thus securely fixed, and made as part of the limb, tightening of the perineal band will extend the member and preserve it of its proper length. By care and attention in applying the apparatus, and in adjusting the cushons about the ankle and perineum, there is little or no risk of the skin giving way. The bandages will require to be reapplied once or twice during the cure; and the perineal band should be tightened frequently. The apparatus is retained for six or eight weeks, the time necessary for union varying according to circumstances. After its removal, great care must be taken at first in moving the limb and putting the weight upon it: it should be accustomed to its former functions very gradually."

FRACTURES ABOUT THE TROCHANTERS.

OBLIQUE FRACTURE THROUGH THE TROCHANTER MAJOR.—When this rare accident occurs, the limb is everted and slightly shortened. A fissure can be felt between the shaft of the bone and the trochanter. The TREATMENT of this case does not differ from the last. The limb is to be extended by the proper apparatus, and a strap applied around the hip, with a pad over the trochanter, to keep the fractured portions together. Bony union will readily take place.

The Shaft just below or about THE TROCHANTERS may be broken. This accident will be followed by great pain and deformity, from the psoas and iliacus internus muscles drawing the upper fragment of the bone upward and forward to a considerable distance from its proper place. When the separation is at the junction of the *epiphysis* (an occurrence difficult to distinguish), only a ligamentous union will be formed. In ADJUSTING this case, the patient should be placed in a sitting posture, to keep the before-mentioned muscles relaxed. In other respects, the treatment and appliances must be the same as for

FRACTURES OF THE SHAFT OF THE THIGH BONE.

Under this head are included all cases where the femur is broken between the Trochanter Minor and the Condyles. They are easily known. The sufferer generally knows as well what is the matter, if not what to do, as the surgeon. His inability to bear weight upon the limb, the deformity, and the crepitus on extension or rotation, are all obvious signs.

If the fracture be an *oblique* one, the limb will be much shortened by the fractured ends slipping by each other; and even when the bone is broken *transversely*, the parts are apt to be separated and pass each other.

The great point of surgery in your TREATMENT, is to be *sure* to prevent the shortening. For this purpose place the patient in a *sitting* position, so as to relax the psoas and iliacus muscles, and approximate the ends of the bones. Then *extend* the limb until it corresponds exactly with the other, which you ascertain by examining particularly the position of the malleoli and patellæ. After the extension and adjustment, apply a *roller* from the toes upward to the body.

Three splints must be placed over the first bandage—one from the external condyle to the trochanter, another from the internal condyle to the perineum, and the third from the patella in front of the thigh to the pelvis.

Besides these splints generally directed, another of stout *gum shellac* cloth should be applied to the *inferior surface*, from the tuberosity of the ischium to the hollow of the knee. It should be wide enough to cover one-third of the thigh and perfectly adapted to its surface.

The splints for the front and sides may be made of wood, but are better when formed of the same cloth, which by combining three or four thicknesses, may be as stiff as wood half an inch thick, yet exactly and easily fitted.

All the splints must be firmly fixed with a roller, and then the limb placed on the inclined splint (see Fig. 86, and note, page 668), and there fastened by bands or buckles, the foot also being attached to the foot-piece.

The *first* BANDAGE that is rolled from the foot upward should be so applied to the knee as to allow it to be bent. It is best to have three *separate* strips, one terminating just below the joint, another covering it and there fastened, and a third commencing just above and inclosing the thigh. Thus if a change in the position of the joint should be required, the bandage may be loosened around it for a moment. At the first bandaging the limb should be partially flexed.

The patient should *not* be permitted to *lie down* for ten or twelve days, as, in that posture, the action of the muscles might disturb the adjustment of the limb in spite of all your dressings. The muscles must not be put upon the stretch before union has taken place.

If *inflammation* has already set in, foment the parts freely, and apply emollients—together with effectual general means.

FRACTURES ABOUT THE KNEE.

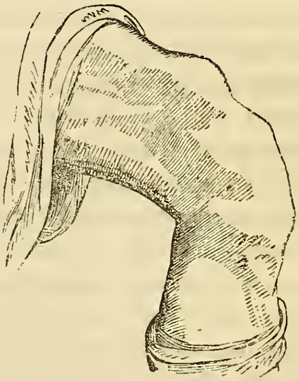
The CONDYLES of the FEMUR are oftenest broken in old persons. It is always a serious accident, sometimes a fatal one. It not unfrequently necessitates amputation

In the TREATMENT much care is required to keep down inflammation, and to prevent irritation of the nervous system, which may easily produce tetanus. *To adjust* the fracture, have the limb straightened, so that the head of the tibia will press upon the condyles, and keep the fractured portions together. Secure by roller and splints. If it be a *compound* fracture the parts must be so fixed that the wound can be dressed without *unsetting* again, or allowing of any motion. The wound should be dressed with cold water, or salt and water, and spirits of Camphor. Have the parts kept constantly wet until all danger has subsided and union taken place.

FRACTURE OF THE PATELLA

Is generally *transverse*. The upper part is drawn high up by the rectus femoris. The fissure between the divided portions is very distinct. The patient has not the power of straightening his leg.

FIG. 89.

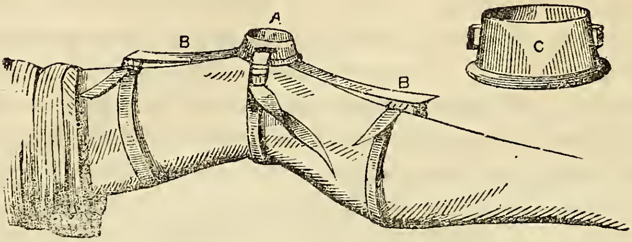


In TREATING this accident lay the limb perfectly *straight*, and secure it in that position with a *stiff splint* placed on the back of the thigh, extending down the calf of the leg. Apply a roller from the toes to the knee, and affix the splint firmly to the thigh. Use emollients and fomentations, if there be inflammation to subdue, or cooling lotions to prevent it until all danger is passed. The divided parts may be brought together in this way: Straps are buckled round below the lower part and above the upper, and drawn together by means of other straps attached to them, and meeting longitudinally at the sides of the knee. Pull the circular straps up and down, until the fractured parts come together and then secure them firmly. Unless close coaptation be preserved, the union will be only ligamentous.

Longitudinal Fracture of the Patella is easily treated. After subduing inflammation, extend the leg, bring the parts together and secure them by bandage, with compresses and pasteboard splints. .

For the difficult object of fixing the patella in its place after dislocation, or keeping its segments together after fracture, an ingenious apparatus has been quite recently invented—(represented in Fig. 90). This consists of a ring or case exactly fitting the patella, two springs (one up the thigh, the other down the shin), and three straps and buckles. The patella case may be described as a tubular ring or *shallow cylinder*), indicated by letter A in the cut, and shown also on a larger scale at C) very slightly funnel-shaped, about two inches in hight, made of heavy tin, with the lower edge rolled outward, and the inside padded and lined with buckskin. This is exactly fitted over and round the patella, and firmly secured by the strap going twice under the knee, and through the loop or staple on each side. Besides this strap, the curved springs (B B—riveted to the cylinder at opposite points, at right angles to the staples) exert a constant force, tending to press the cylinder down closer, the tendency of the other ends to rise being counteracted by the straps round the leg and thigh. With this apparatus the patient can even walk about without risk of disturbing the fracture or allowing the patella to be displaced. It would be safer, however, in any case, to keep the leg at rest and extended for two or three weeks. For this reason a straight splint should also be fastened under the leg and thigh. After this period, the use of the joint could be gradually resumed, the apparatus in front being still *worn till union is complete.*

Fig. 90.*



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* This engraving was made, as were all the other illustrations in this work, at the establishment of G. K. Stillman, in this city. In this case, as in those of clavicle and leg bandage, and other original designs, Mr. Stillman was also the draughtsman. The apparatus above described (perhaps the only one in this country) was made by Mr. M. Wocher, another excellent artist of this city. He is also the manufacturer of the new tooth forceps described on page 329, and the other instruments represented in various parts of the work. I have found as little necessity for resorting to *Eastern artists* in the mechanical part of the work, as advantage from consulting *Eastern authors* for its materials—at least all that is practical.

The Head of the Tibia

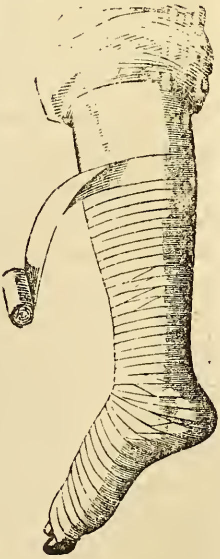
May be fractured obliquely—into the joint across the articulating surface. The case is readily distinguished, and the TREATMENT must be the same as directed for fracture at the upper side of the joint through the condyles of the femur. Keep the leg extended by a proper splint, and apply a roller around the parts so as to press the fractured portions together. A pasteboard or shellac splint will assist much in keeping the parts firmly fixed in their proper position. *Early passive motion* is necessary in this as in the other cases of fracture about the knee joint to prevent a stiff leg.

Fractures Below the Knee.

For a BROKEN LEG—between the ankle and the knee—a case too plain to the patient as well as practitioner to need description—whether the fracture be simple or comminuted, you can generally use with advantage such apparatus as I have recommended for fractures of the neck or shaft of the femur. The most convenient of them for the present purpose will be double the inclined-splints (see plate No. 86, and note, page 668).

The *bandage*, that is the first thing to be applied in these cases, need not begin over the ends of the toes, nor be so firmly rolled, as was directed for the treatment of ulcers (and illustrated by Fig. 2, page 138.) It will be well enough in this case to leave out the toes and heel, and run on with fewer turns and less over-lapping, as is *usually* done in other cases where such looseness is not so safe or effectual. (Fig. 91 shows this common bandaging.) This first roller is not to be so tight as to prevent further *extension*, and exact adjustment being made after it is on; for it will be best in most cases, especially

Fig. 91.



In OBLIQUE FRACTURES, to place the limb (after provisional rectification with the roller as above), on the inclined-splints, and there extend it so as to compare exactly with the other, and then fix the foot firmly to the board provided for the purpose, by straps that will not stretch or get loose. Remember that the great toe is always to be kept in a line with the inner edge of the patella. After having the bones thus symmetrically adjusted and securely fixed, two or three *splints* should be still applied to the sides and front of the leg, and kept on by a roller, which also includes the large supporting splint or "inclined-plane," fastening the whole firmly together. By this plan you not only make "assurance doubly sure," but can at any time remove the splints for the purpose of examining or dressing, without the risk of disturbance.

I once, on the spur of the occasion, in a bad case of comminuted fracture, got up the following apparatus—which I shall describe, because while I believe it as good as any other, it can be readily made wherever there can be found *wood*, with an axe, a hand-saw, an inch or an inch and a half augur, and a jack-knife.

Get two pieces of board, four or five inches wide, and half an inch thick (common siding will do), and long enough to reach several inches above the knee and below the foot. Bore a hole near the lower end of each, and also two holes through each at the upper ends. Protect the thigh from the ends of the boards by a roller, to which two pads of cotton cloth are attached. To these pads you fasten your boards by strips of drilling or strong muslin, run through the holes and round the limb. This done, wrap the foot and ankle moderately tight with a roller, and fix, by its means, a strong band to each side of the ankle, and another behind and above the heel. Pass through the lower holes a smooth stick, ten or twelve inches long, and large enough to nearly fill them. Then make extension on the leg by the straps attached to the ankle, or by taking hold of the foot and heel, until the fracture can be properly adjusted, and fix the straps to the cross-piece below, so as to prevent any relaxation. To be certain that the proper extension has been made, you should always measure from some fixed point on the knee or pelvis to the malleolus, and see how the length compares with that of the sound leg. When thus secured in position, roll the leg with the bandage, and apply splints in front, behind and at each side, all fastened on by the bandage. To make this last part of the operation more convenient, the lower ends of the boards may be separated five or six inches further, with but little alteration in the distance of the cross-piece, to which the extending force is fastened, and which may be *turned*, so as to roll up and proportionally to shorten the extending straps, and fixed as long as necessary by a pin, nail or wedge. This will be safer than to trust to an assistant for holding the foot, until the apparatus can be replaced.

As, however, the patient will get tired of having the limb kept straight, the apparatus may be so contrived as to let him have it bent. There may be circular joints at the knee which will bend without allowing the distance between the knee, and the foot to vary; and a pad may be fixed at the foot, like a sole, extending an inch or more behind the heel, to which the extending straps may be made fast. This contrivance becomes then an equivalent for the inclined-splint, before recommended.

If it is deemed necessary to *keep up* the extending force, a strap may be attached to the foot, and passed over the rounded cross-piece, with a weight attached.

This apparatus, simple as it is, and easily made by any one who can handle the commonest tools, is well adapted to cases of *compound fracture*, where it is necessary to remove the rollers and splints to dress the wound. The danger of *contraction* is entirely *prevented*, while the affected part of the limb can, if necessary, be completely freed from *contact* of splint or bandage.

But among all contrivances, extempore or elaborate, justice requires me to state that the apparatus invented and patented by Dr. Jas. H. Willard, of Brownhelm, Lorain county, in this State, is probably the best and most generally available in fractures of the *leg* and *shaft* of the femur. I should be less inclined to make this acknowledgment, if the inventor had taken advantage of his patent right. So far from it, he lends his machine and allows it to be copied by any one who needs it. This liberality is as honorable as the contrivance is ingenious. It is too complex for verbal description, or perhaps even a common drawing, but could be made, after a model, in a day, by any good joiner or cabinet-maker, with the help of a smith or a few screws, etc., ready made. The frame work extends the whole length of the limb, and the relative position of each part can be varied to suit any case. The limb is supported on webbing tightened by a small windlass, which is movable in the frame, as it has also to support the heel. The beam that supports the knee can be raised or lowered, as well as advanced or drawn back on the frame. The whole can, with great advantage, be first fitted to the sound limb, the injured one then placed on it, and extension there made by bringing the retracted foot down to the foot-board—previously fixed to the right distance from the knee or tuberosity of the ischium.

FRACTURES ABOUT THE ANKLES.

THE FIBULA is not unfrequently broken about three inches above the ankle. This is CAUSED by *twisting* the foot *outward* and accompanied with partial or entire dislocation of the ankle The resulting deformity is considerable: the internal malleolus projects, forming a tumor, and crepitus can be felt, when the

FIG. 92.

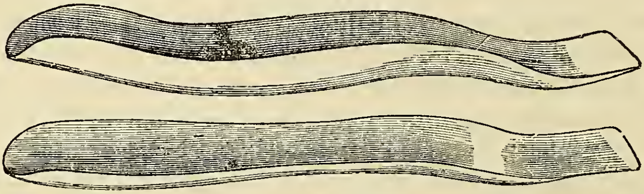


Fig. 93.*

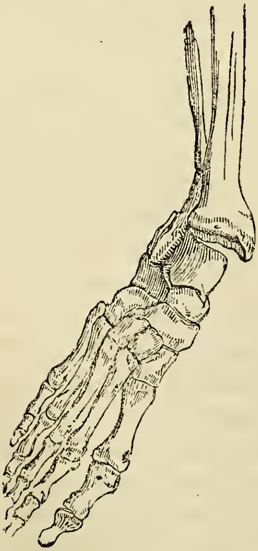
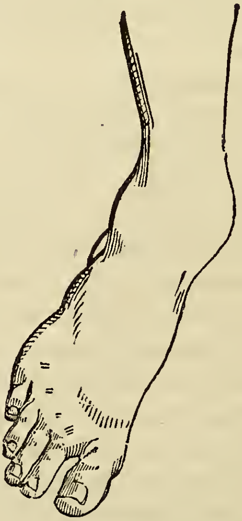


Fig. 94.*



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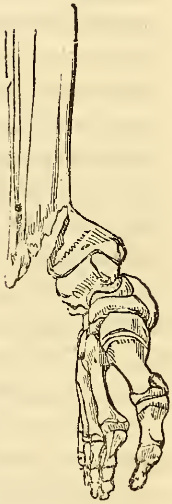
* Fig. 94 represents the position of the foot and external appearance; Fig. 93 the condition of the bones or surgical anatomy of the case.

foot is moved, just above the *external malleolus.* The dislocation has first to be *reduced,* and the fracture then ADJUSTED, and kept in place by a splint at the back of the leg, and a footboard, fixing the foot so that the great toe is in a line with the inner edge of the patella. Another splint along the course of the fibula will be necessary, and bandages, as in other cases. Keep the parts wet with spirits and water, or other refrigerants; and both leg and foot quite still, and in the easiest position for the patient.

The TIBIA may be fractured near its lower end — generally obliquely, with the *internal malleolus* broken off (see Fig. 84), by *twisting* the foot *inward* with sufficient force. The fracture may be transverse, extending through the fibula. The symptoms, in either case, are the same and obvious; the foot is seen turned inward, instead of outward, as when the fibula *alone* is involved, the external malleolus projecting (as seen in the figure), if not also broken off. The crepitus is to be felt on the inside. The treatment is in all respects the same as directed for the former case, except that the one splint is to be applied on the side of the tibia, instead of the fibula unless the latter be also broken and require another.

Fig. 95.



Fractures of the Foot

Are in nearly all cases connected with severe contusions, and more or less laceration. Treat them in all respects, aside from the fracture, as you would any other contused or lacerated wound. The bones are to be confined to their proper places with pasteboard or shellac splints, compresses and bandages. In all cases the foot has to be kept very still, and other precautions used to keep down inflammation.

The Salt and Camphor *lotion,* which has been much used by our practitioners, and frequently mentioned in the course of these lectures, is particularly adapted to compound or comminuted, and what under ordinary treatment become "complicated" fractures of the foot or hand. A remarkable CASE, in illustration, recently occurred in this county, the result of which was so unexpected by those not acquainted with the Eclectic Practice, that it may not be amiss to give the particulars. An iron bolt some two inches thick, with a blunt, rough head, had been driven through a man's foot by main force of the machinery in a steam mill, fracturing or crushing four or five of the metatarsal bones, and extensively lacerating the tendons and other soft parts. It was the decided opinion of two old school practitioners, who saw the case directly after the occurrence, that nothing but amputation could save the patient from fatal tetanus. A very different prognosis was made by my friend, Dr. A., knowing, as *he* did, that he could *treat* the tetanus *medically*, should he not succeed in *preventing* it, and that amputation would still be a safe resource, should he fail in restoring the foot. After adjusting the bone, or fragments of bone, as well as he could, he bandaged the foot lightly and had it kept constantly wet with a preparation, composed of equal parts of common Whisky and Water, saturated with common Salt, to which strong Tincture of Camphor was added in the proportion of a pint to two quarts of the first mixture. Under this, the wound caused little or no pain, and healed in a surprisingly short space of time, though the little sloughing that did occur was slow in its progress. The patient recovered a good *use* of his foot, though with some slight deformity.

I am now treating a somewhat similar case. My patient about two weeks since got his hand in the way of a circular saw, running by steam, and had it nearly amputated at once. Three of the metacarpal bones were divided with nearly all the tendons, vessels and nerves on the back of the hand, the wound being also filled with sawdust. Since first adjusting and supporting the parts with bandage, splint under the hand, etc., I have had it constantly dressed with a Slippery Elm poultice, and this kept wet with the above named preparation. The patient has not had six hours' pain since the first dressing.

The swelling of the hand has gone down, some parts are united, others healthily granulating, and sloughing is only now beginning where that process is indispensable.

This remarkable retardation of the sloughing process has been frequently noticed, and illustrates the effect of the combination in preventing or restraining inflammation.

[It is generally admitted that the treatment of fractures is the most difficult part of surgery, and the records of our courts will show that it is financially the most dangerous part to the practitioner. Indeed suits for malpractice became so frequent three or four years ago, that many surgeons of ability refused to attend cases of fracture unless an "indemnity bond" was given to insure them against damage. While admitting the difficulties to be met with in the treatment of these injuries (and they seemed to be so great at one time in my practice that I refused several cases), I am now firmly of the opinion that with proper apparatus and care, it will prove satisfactory both to the practitioner and patient. I am just as well satisfied, however, that these cases can not, as a general rule, be treated with shingles or an impromptu splint whittled out of a board at the time it is required.

In noticing the causes of failure, and especially those that have given rise to many of the suits of malpractice, we can not overlook the very general employment of the roller previous to the application of the splints. In these cases it has always seemed like a relic of barbarism, associated with the pot of boiling pitch in cases of amputation, the actual cautery for relief of hæmorrhage, etc. Very useful in its place, and one of the most important of our surgical appliances, I contend that it is entirely out of its place in these cases. I have known it to be productive of loss of limb and deformity in several cases, and have had to remove it three times in my practice, in consequence of arrest of circulation. As an example,

Robert E——, October 11th, 1858, had fracture of both bones of the forearm, at the middle third. The fracture was occasioned by a fall from the roof of a one-story building, and was oblique of the radius, comminuted of the ulna. The roller was *loosely* applied from the hand to the elbow, with an anterior and posterior splint over it, bound on with tapes of roller two inches wide. The dressing was made about four in the afternoon, the patient being left comfortable. At two the same night, I was sent for, the boy suffering from extreme pain. On examination the fingers were purple, swollen, and cold, and the arm so swollen as to leave the marks of every turn of the roller. The roller was of course immediately removed. Arnica and Camphor were employed, and with difficulty the arm was saved. Now in this case the bandage was so loosely applied that it was not thought possible that danger could occur, and yet if the pain had not alarmed the parents the boy would undoubtedly have lost his arm.

The reason given for employing the bandage is, that it supports and renders firm the muscles surrounding the fractured bone, and by keeping them quiet it prevents irritation and consequent contraction. To accomplish these purposes the roller would have to be applied so as to make moderate and equal compression from the extremity upward. I believe that no sane man would so apply a roller in this case, or if it were applied, that in a large majority of cases he would be glad if his patient escaped without serious injury. Again, we find it recommended to set the limb, then apply the roller, then the splints. Now, in cases of oblique fracture, if the roller is applied after the fracture is set, there being as yet nothing to maintain the bones in position, the extension will have to be made again and the necessary manipulation to determine that the bones are in proper position, which is rather difficult, becomes more so when the limb is encased in a layer of muslin.

Another of the reasons of failure is, the imperfect means of producing extension and counter-extension, and maintaining the limb in a fixed position. It is very evident that if the broken extremities of bone are allowed to move one on the other, no matter how little, the reparative process will be much prolonged. We might as well expect a transverse incision of a muscle to heal up, the part being kept in continual motion· This is a most serious objection to many forms of apparatus, and to some extent holds good of all.

These injuries have been properly classified as transverse and oblique fractures. In the first the bones being broken squarely across, when the fragments are brought into apposition, there is no danger of shortening of the limb, and no need of extension and counter-extension. In the second, owing to the shelving character of the broken surfaces, there is nothing to antagonize the contraction of the muscles, and there is constant tendency to shortening.

In the treatment of transverse fractures nothing more is necessary than to bring the bones in perfect contact, and employ such splints as will prevent movement of the part. Both of these are essential, however, and trouble sometimes results from want of proper attention in this respect. Thus, if the broken surfaces are not properly placed, leaving a projecting edge of bone on each side, union will not take place rapidly, the provisional callus will be larger in quantity, and frequently a troublesome soreness or want of action is experienced for years in consequence of the unevenness of the bone. If the part is not properly supported by splints, more or less movement of the fragments takes place in consequence of muscular action, and the union is retarded. Among the best splints in use for these fractures are those manufactured by Mr. Welch, and termed the Welch splints, as they are light, and easily adapted to the shape of the part. In some cases stout binder's boards answer a good purpose. The bones having been carefully adjusted, two of these splints, as long as can be used, are padded with cotton and applied to he limb and secured by means of short strips of roller, two inches wide, passing around the limb and tied on one of the splints. A sufficient number of these ties should be used so that the edge of one will join the one next below.

In transverse fractures of the humerus the splints should be a posterior angular, if it can be readily obtained, in order that the forearm may be rendered motionless, and an anterior straight. In fractures of the ulna, or radius, or both bones at their middle or upper third, an anterior and posterior straight splint, the full width of the arm, is employed, with or without the graduated compress between the bones. A very important point in the treatment of these fractures is to have the splints sufficiently wide to prevent the *ties* from drawing the bones together, and thus endangering a loss of the rotary movement of the forearm.

In transverse fractures of the femur, the long Physic splint (simply a half-inch board, four and a half feet in length, and five inches wide at the one end, and three and a half inches at the other) should be employed, the one extremity fastened around the body, the other to the foot, while at the point of fracture it answers as an external splint, the ties passing over it. Or the fracture should be dressed upon the inclined plane, the thigh and leg being both secured, The short straight slpints are never sufficient, in these cases, to prevent the movement of the fragments one upon another in consequence of muscular contraction.

In fractures of the leg, of one or both bones, the usual dressing is two lateral splints extending down below the sole of the foot, and carved for the reception of the malleoli. In fracture of the fibula, or tibia alone, I prefer the wooden boot, consisting of a posterior splint, adapted to the calf of the leg, and joined by a foot-piece at right angles, firmly supported by braces. This being carefully padded, the foot and leg is firmly attached, and the patient finds himself in a condition to go about on crutches as soon as the first inflammatory action subsides.

In objecting to the roller in all cases of fracture, it was principally in consequence of the subsequent swelling. Now it may not have been generally noticed, but it is a fact, that inflammation and swelling are generally proportionate to the mobility of the part at the seat of fracture, and that when the part is rendered perfectly rigid, there is but little inflammatory action.

In *oblique* fractures an additional, and, in fact, the principal object is to get and maintain the original length of the limb. Of course the principal object is to prevent deformity by shortening, but a very important one is the prevention of inflammation by holding the bones in apposition, and preventing the continued irritation of the parts by the sharp fragments. To accomplish this many plans have been adopted, but almost all have failed to some extent.

In oblique fractures of the humerus a very good dressing may be extemporized as follows: Take a half-inch board, three inches wide, and long enough to extend below the olecranon, when the forearm is flexed at a right angle, and to extend four inches above the shoulder: to the lower extremity nail on or attach by means of a common hinge and screws a piece a foot long for the forearm to rest upon. This must be braced at right angles, either with metallic or wooden braces. Through the upper extremity an inch hole is bored. Previous to the application of the splint strips of adhesive plaster, twenty inches in length and one and a half inches in width are applied to the side of the thorax under the shoulder and brought up above; some three or four of these may be applied before and behind, and secured firmly by a roller passed around the body. The splint being carfully padded is then applied to the arm, and attached to the adhesive plaster above by means of twine through the hole in its upper extremity, having abundant room between, the angular piece and forearm for extension. The extension is now made, and the arm secured by means of short strips of roller passed over a short splint on the anterior part of the forearm, and tied over the splint below. If I have made myself intelligible, it will be seen that the counter-extension is made by adhesive straps from the thorax, and not from pressure in the axilla, by a strap or crutch, as usually employed, and the extension by drawing the forearm down upon the angular splint below. One or two short splints—or an anterior splint of two thicknesses of pasteboard, or binder's board, is applied to the site of fracture, and secured by the tapes as already described.

In oblique fractures of the bones of the forearm I use the angular posterior splint, the arm piece extending up at least as far as the insertion of the deltoid, and the forearm piece extending out beyond the fingers. The splint being well padded is now attached to the arm by the roller-ties, which furnishes the counter-extension; adhesive straps attached to the lower part of the forearm and hand, are carried out by means of a cord passed through a hole at the extremity of the splint and made fast to it; increased extension may be made daily by passing a stick through the loop of cord, and twisting it, as in Neill's apparatus for fracture of the femur.

A very frequent fracture of the forearm, and one that is sometimes difficult to treat, is Colles' fracture of the radius, occurring generally within an inch and a half of its carpal articulating surface. The deformity in this case is so marked that many would suppose there was great displacement of the fragments, but this is not usually the case. The hand is firm, the capitulum ulna unnaturally prominent, and a marked elevation of the posterior part of the wrist. Deformity not unfrequently results, even under the best surgical care. Thus Dr. Mott remarks:

"Fractures of the radius, within two inches of the wrist, when treated by the most eminent surgeons are of very difficult management so as to avoid all deformity; indeed, more or less deformity may occur under the treatment of the most eminent surgeons, and more or less imperfection in the motion of the wrist or radius is very apt to follow for a longer or shorter time. Even when the fracture is well cured an anterior prominence at the wrist, or near it, will sometimes result from swelling of the parts." In Welch's splints will be found a good apparatus for the dressing of this injury (Fig. 83). If a splint has to be improvised, cut a palmar splint, *pistol-shaped*, so that when the hand is attached to it, it will be carried to the ulnar side; a short or long dorsal splint may be used. Under no circumstances must the roller be used, as there is great danger of arrest of circulation and sloughing.

In treating fractures of the forearm an important question with the practitioner will be, whether to put the arm in a supine semi-prone or prone position. The patient's feelings will be best accommodated by the two last, though I am satisfied that the best results may be expected from the first. In the employment of the angular splint in cases where extension is necessary the supine position is constantly maintained, and can not be avoided, hence one of the advantages of that dressing. Dr. Hamilton remarks, and he is the highest authority with me, that, " When the fracture is compound it is often quite impossible to retain the arm in the half-proned position; since, when thus placed, and only slightly supported, as it must necessarily be, it inevitably falls over upon its palmar surface. There can be no doubt that in such a case we ought from the first, if it is found practicable, to place it upon its back, in a position of complete, or nearly complete, supination."

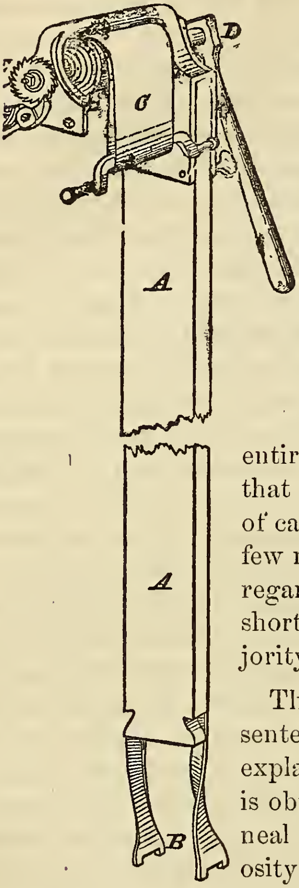
"Finally," the same author remarks, "whatever be the mode of dressing, let me repeat the injunction to examine the arm frequently. No surgeon can do justice to himself, or to his patient, who does not look at the arm at least once in twenty-four hours during the first ten or fourteen days, and, in some cases, the patient ought to be seen twice daily."

Fractures of the femur are almost always oblique, and, owing to the strength of the muscles, are very difficult of treatment. The bone is most frequently fractured in its middle third, being in the proportion of about two to one of its upper or lower third, or equal to one-half the entire number; about ten per cent. are fractures of the neck, either without or within the capsular ligament. It is in fractures of this bone that deformity most frequently results, but very few cases recovering without shortening. So many cases of malpractice have arisen from the imperfect results following treatment of these fractures that it is interesting to look at the authorities on this subject, and see what results may be reasonably expected. I will quote from Hamilton's work on Fractures and Dislocations, which should be in every physician's library, a compendium of all that is known on the subject.

Hippocrates remarked, "For the bones of the thigh, though you draw them out by force of extension, can not be held so by any hands; but when the first extension slacks they will run together again, for here the thick and strong flesh are above binding, and binding can not keep them down." Avicenna said, "That it is a rare thing for the thigh once broken to be perfectly cured again." Chelius remarks, "That fracture of the thigh-bone is always a severe accident, as the broken ends are retained in proper contact with great difficulty. The cure takes place most commonly with deformity and shortening of the limb, especially in oblique fractures, and those which occur in the upper and lower third of the thigh-bone. Compound fractures are so much more difficult to treat." Maclise says: "Out of every six fractures of either clavicle or thigh-bone, I believe that, as a result of our treatment by the present forms of mechanical contrivances, there would not be found three cases of coaptation of the broken ends of the bone so complete as to do credit to the surgeon." Says John Bell, "The machine is not yet invented by which a fractured thigh-bone can be perfectly secured." Said Benjamin Bell, "That an effectual method of securing oblique fractures in the bones of the extremities, and especially of the thigh-bone is perhaps one of the greatest desiderata in modern surgery. In all ages the difficulty has been confessedly great; and frequent lameness produced by shortened limbs arising from this cause, evidently shows that we are still deficient in this branch of practice. Colles observes that "Although three or four methods of treatment are practiced, the pieces at the conclusion are often found overlapped." Velpeau, in speaking of the various apparatus for dressing the fracture, remarks that "Most of them fail to obviate the shortening, and produce eschars, anchylosis, or troublesome arrests of the circulation. This is the price that is usually paid for the employment of these complicated machines, and a shortening of a quarter to three-quarters of an inch is not avoided after all. Nelaton says, "A fracture of the body of the femur, with an adult, is always a grave accident, inasmuch as it required a long confinement to the bed, and especially on account of the shortening of the limb, which it is almost impossible wholly to prevent." Malgaigne's opinion is, that "When we do not succeed in driving back the displaced fragments, end to end, so that they may oppose themselves to the action of the muscles, it is impossible to preserve to the member its normal length, whatever may be the apparatus or method employed."

These quotations might be carried to any length, for it is the opinion of a large majority of surgical writers, that perfect coaptation of an oblique fracture of this bone is never obtained, and that there is always shortening to the extent of from half an inch to one and a half inches, even when the greatest skill is employed. As regards time, we find by examining the reported cases, that it varies from ten weeks to six months confinement in bed. I am not going to argue that we can entirely prevent shortening, but claim that we can so prevent it in a majority of cases that it can not be noticed after a few months, when the patient walks. In regard to time, I believe that it may be shortened to five weeks in bed in a majority of cases.

FIG. 96.



A A Long straight splint, reaching from the axilla below the foot; B iron arms over which the perineal strap passes; C Webbing attached to the pulley working by the lever D, and attached by the swivel to adhesive straps from the leg; E Rachet. The splint is easily applied, and cheaper than any other for the purpose, as it can be furnished for $7.

The splint that I employ now, is represented in the accompanying cut, which explains itself. The counter-extension is obtained by means of a padded perineal bandage passed over one tuberosity of the ischium, or adhesive straps attached to the thigh, perineum, and abdomen. The extension by means of two wide adhesive straps on each side of the leg, extending from the knee below the foot, and secured by a well-adjusted roller. The long splint being padded, is applied to the side; the perineal bandage is attached above, the perineum being protected by two or three folds of patent lint; the adhesive straps below are attached to the iron bar in the webbing by looping upon themselves and tying with cord. The apparatus is now ready for setting the bone, which is accomplished by simply turning the pulley, thereby drawing the limb out to the proper length. I do not claim that the principle of the apparatus is original, but it works better than anything of the kind I have ever seen.

A great trouble in the way of a perfect result is the difficulty of obtaining counter extension owing to excoriation, ulceration, and pain of the perineum where the strap presses upon it. This may be modified, and the pressure rendered endurable by passing the strap over the tuberosity of the ischium, by the use of patent lint under it, or the application first of an adhesive strap. The perineal strap may be unloosed and the dressing under it renewed every second or third day, by having an assistant to hold the foot and lower portion of the splint steady while it is done and replaced. The pressure is not, however, so severe as might be imagined when the part is kept perfectly still; it seems to be proportionate to the amount of mobility, which, by producing irritation, causes muscular contraction. All that we have to do is to antagonize the action of the muscles passing down to be attached to the limb below the fractures; and, though this is more than can be done when the muscles are irritated, it is not difficult when they are quiescent. An apparatus that is continually giving way, and being drawn out, is worse than none at all, as it keeps up continual irritation.

The adhesive straps applied to the leg in the manner named, furnishes the most effectual and satisfactory means of extension. It gives rise to no irritation, there is no injurious pressure, arrest of circulation or painful sensations. It is true that if the roller is not applied over it, it will slip, but when so applied, it remains perfectly firm. It is a question in my mind whether, in many cases, it would not be better to make the counter-extension as well as the extension by means of adhesive straps; the only trouble is that it is difficult to make the straps adhere, as we can not use the roller as we did below.

The long straight Physic splint is now considered by most surgeons to be the best dressing for fractures of the femur, and in this splint we have it in perfection, extending from the axilla down. As before remarked, I am satisfied that complete immobility of the limb is the most important point in the treatment, and this we secure better with the long straight splint than with any other.

It has seemed to me to be desirable to have a fracture-bed so constructed that the patient's weight would make the counter-extension, and at the same time not be placed in the uncomfortable position of having his head lower than his heels.]

LECTURE LII.

COMPOUND AND COMMINUTED FRACTURES, COMPOUND DISLOCATIONS, ANCHYLOSIS AND PSEUDARTHROSIS.

Compound Fractures*

Are to be treated the same as simple ones, so far as regards the "setting" and "fixing" of the divided bones; but the bandages and other apparatus must be so arranged as to enable you to dress the wound, without the risk of subsequent displacement. If called early, adjust the fracture as soon as possible, and apply cloths wet in cold water (or what is generally better, Water, two parts; Spirits of Camphor, one part; and common Salt, one ounce to the quart), taking care to keep the parts *constantly* cool and completely shielded from the atmosphere. The dilute Tincture of Arnica is doubtless an application of the greatest value in these cases (see pages 72 and 82).

If there be inflammation and swelling when you are called, use fomentations and emollients—Hops and Elecampane will be good for the former purpose, and pulverized Elm, with Lobelia herb, for the latter. Washing the wound and keeping it constantly wet with a strong decoction of White-oak Bark, will often operate like a charm, relieving the pain and taking down the swelling in the course of a few hours. This is also an excellent safeguard against gangrene (see page 71).

If further measures against *gangrene* are necessary, you can use Yeast, Charcoal and Salt, or Pyroligneous Acid (as a substitute for which, a weak solution of Creosote may do, though not so well). The Althæa Officinalis boiled in Milk is also excellent against gangrene. The Elm poultice wet with the Pyroligneous Acid is at once a good soothing and antiseptic application.

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*For definitions and general explanations, see Lecture XLVIII, page 635.

If the *inflammation* runs high, active cathartics and diaphoretics should be used. *Emetics* of Lobelia, Sanguinaria and Ipecac, given slowly and long continued, exert a very favorable influence. Our Common Acetous Emetic (For. No. 4) is also a good article for this occasion. For a *purgative*, an infusion of Senna, Salts and Manna, may be given in divided doses; also the comp. powd. of Senna (For. No. 3); or minute portions of Podophyllin, with Cream of Tartar. Either of these articles can be given every hour or two, until a free operation is produced. (See under Treatment of wounds and of Inflammation).

COMMINUTED FRACTURES

Have to be treated in a similar manner to "compound." If there be *spiculæ* of the bone, already separate or loosened by suppuration, as often happens, remove them with your fingers or forceps, but use no *force*. Unless they come away easily, let them remain. If *matter* form and there be no rupture of the surface, puncture and let it off.

When bones are separated from their connections with other bones, as well as broken—constituting one variety of "COMPLICATED FRACTURE"—or it may be also, a

COMPOUND DISLOCATION,

In which event, as in the simple laceration, strictly so called, (see page 592)—the luxation is to be first reduced, and the case then treated as one of "Compound Fracture," or as directed under that head—this difference, that special care should be taken to *prevent suppuration.* Use the cooling lotions and astringents before recommended, but *not* the emollients. If, however, the inflammation has already gone so far, that suppuration or worse is inevitable, then resort to fomentations and poultices.

SUPPURATION *must be encouraged* as a means of avoiding tetanus and gangrene. The sad consequences of suppuration, described in the books, are by no means inevitable. With the proper local and general treatment, no particular danger to life need be incurred. When the activity of the inflammation has subsided, and the discharge of pus continues profuse, it may be checked and adhesion favored by a few applications of some strong vegetable astringent, such as the Oak Bark, the Geranium, the Rock Brake (Pteris Atropurpurea), or the Epiphegus Virginianus or Marsh Rosemary. A wash of some of these articles, with the aid of judicious compression, will soon remove all danger from suppuration. [For other practical directions, see under the general head, pages 595–6].

AMPUTATIONS may have to be resorted to in these cases, though it will be rarely necessary under judicious and efficient medication (pages 475, 519.) When, however, the suppuration is extensive, though the limb as well as life may be saved

ANCHYLOSIS

Is very apt to follow. This subject might be properly taken up in this place, as it is a result of mechanical injury to a joint, as well as of spontaneous disease. The subject has, however, been anticipated in both these aspects. I mentioned the precautions necessary to be used to prevent this accident in connection with Scrofulous Diseases of the Joints—(see Lecture XIII, page 182.) Any injury of the joint likely to involve this result will of course have to be treated accordingly, bearing in mind the peculiar liabilities and future uses of the part.

PSEUDARTHROSIS—UNNATURAL JOINTS.

If a fractured bone fails to unite by ossification or callus, and remains loose, a "false joint" is formed, the limb being nearly useless. It may occur from a fracture of any of the bones, but is most frequent in the arm and thigh. It may be occasioned by a too early use of the bone, by some fault in the constitution preventing the formation of callus or the deposit of ossific matter, or from a neglect of bringing the fractured ends properly in contact. Whatever may have prevented the union, the result is the same.

The extremities of the bones become smooth and round, and are covered with a kind of ligamentous capsule. In some cases a regular ball and socket joint is formed, so that the ends turn upon each other.

If the patient be old and feeble, little hope of effecting union can be entertained after the lapse of twelve months. In such persons the greatest care should be exercised in keeping the fractured ends in contact, and perfectly free from motion for at least one year after the fracture, unless union takes place sooner. If, however, union is not effected in that time, the patient may be allowed to use the limb. This experiment of using the limb after the lapse of three or four months, or *rubbing* the fragments together for the purpose of promoting callosity, has proved successful—(see page 638). Strong *stimulants* may be applied to the parts, either with or without the frictions, with good effect.

The *safer* plan in all cases is to keep the parts in juxtaposition by splints and bandages, and apply stimulants for *from eight to twelve months*, at least, before any motion is allowed to be made. *Cold bathing* over the whole body, with pure air and nourishing diet, and freedom from mental anxiety, will do much to aid in the cure.

But if you are called to a case after the unnatural joint has become established, some more direct measure will be requisite. There are two modes of remedy in use among surgeons. One is, to cut down to the bone, *saw off* the fractured *ends* and place them together firmly, closing the wound and allowing it to heal by the first intention—the limb to be supported by splints, etc., until union is effected. This is successful in some cases, but it is a formidable as well as difficult operation, and has been followed by violent symptoms, and even the death of the patient.

The *seaton* has been quite successful, though it, like other means, occasionally fails. In performing this operation, the surgeon uses a long seaton needle armed with a skein of silk. The limb is extended by assistants or machinery so as to separate the extremities as much as possible. The surgeon passes the armed needle directly through the limb, from side to side, between the ends of the bones, being careful to avoid large arteries, veins and nerves. Lint and small compresses are placed over the holes, and the splints and roller applied to support the limb in a proper position. The seaton should be allowed to remain until union is complete. This may take *five* or *six* months, and even in some cases *twelve months*. It should be continued for the latter period, unless union occurs sooner;

for cases are recorded in which consolidation of the parts took place after remaining disunited, in spite of the seaton, for a year or more. It is proper to observe that the general health of the patient should be attended to; if impaired, every possible means for its perfect restoration should be employed, and all causes calculated to impair it, scrupulously avoided. The accident rarely occurs where there is not some general debilitating cause in operation.

LECTURE LIII.

OF AMPUTATION IN GENERAL, ILLUSTRATED BY THAT OF THE ARM.

THIS "CAPITAL OPERATION," so called, though one of the most conspicuous and regarded as serious, is in reality one of the simplest and easiest. Instead of its being any proof of great surgical skill, it is too often an evident result of "bad surgery," and always with the best, a confession of inability—to do better. But enough has been said on this point elsewhere. For not a few of the cases in which this mechanical expedient is usually enjoined, the proper medical treatment that will render it unnecessary, has been directed in preceding lectures. It may be much easier to make and heal up a simple *incised wound*, than to *cure* a scrofulous joint or ulcerated bone; but the true surgeon will always prefer to do the latter. *Amputation* is the *last resort* of a baffled surgery. (For the *question* of amputating, see pages 108, 186, 562, and elsewhere, in connection with the diseases or contingencies supposed to require it).

There are TWO MODES of amputating. The old and till lately most common one, is called the *circular operation.* The other is of comparatively recent origin, and called, by way of distinction, *the flap operation.* The latter is extensively used in this country, and is supposed by many to insure a better stump. But if the circular operation is properly executed, as good a flap is left, as after *the* flap operation; and if the latter is carelessly or unskillfully performed, as bad results may follow, or as poor a stump be left, as can be attributed to the older practice. More will depend on the skill and care of the operator than the kind of operation. The flap operation, however, is generally easier for the patient as well as the surgeon, and less likely, even when indifferently executed, to leave the stump imperfectly covered. For these reasons I shall give it the preference, though I shall describe both operations. The choice must be left to the discretion of the operator, who, if he understands his business, can make as good a job in either way. The state of the limb, and the necessity for cutting at as little distance as possible from the diseased parts, may sometimes determine the preference.

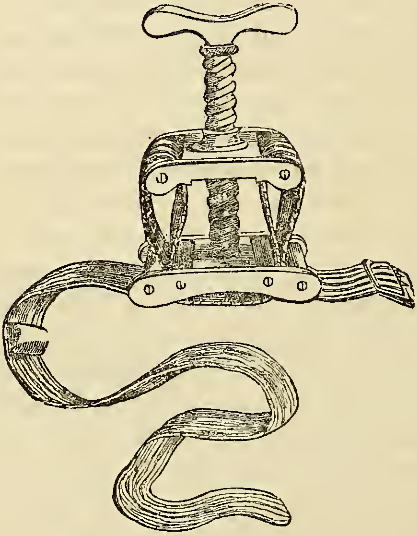
The regular "AMPUTATING CASE" is very convenient, but by no means indispensable. It contains only four instruments that are not, or ought not to be, in every practitioner's pocket case (see page 564). These four are the tourniquet, large knife (or knives), saw and bone-forceps. The last article is for nipping off splinters, or dividing small bones, as those of the fingers, (for which a particular small saw is also often kept.) The knives in use are a large blunt and round-pointed one, for circular operations, and two sharp-pointed ones, sometimes called "catlins," of different sizes, for flap operations on different parts. The larger of these, or one of medium size, will answer for all cases, and can be used for the circular operation also. The special "case" should also have a scalpel (for dissecting up the integuments round the bone, etc.,) artery forceps and tenaculum, with ligatures, surgeon's needles, lint and adhesive plaster.

It is well enough to have all these things kept *separately* ready and in order for use, but the only essential pre-requisites for the business, are the proper knowledge and resolution. A common carving knife well sharpened, or a butcher's knife of the suitable shape, may be handled as scientifically as any. The carpenter's sash saw, if good and properly filed (the teeth set coarsely or wide apart), will go through bone as well as one made especially for the purpose—and may *even* be made to *look* as well, by blackening the handle!—it *is a surgeon's* instrument when kept and used by one. A substitute for the tourniquet could be contrived by any one, who understands the use of it. The bone-forceps are seldom necessary, when the sawing is done as a good *machine* would do it—any rough margin of the bone *might*, in case of necessity, be filed off smoothly. These remarks are made, not to encourage any one in setting up as a surgeon without the necessary (or even the best and most convenient instruments), but to show that these things are of comparatively trifling importance, and do away with the prestige and mystery of all such crafts.

AMPUTATION OF THE ARM

All the preparation absolutely necessary for this operation, is that of the TOURNIQUET (Figures 97 and 98), with a bandage round the forearm that it may be held more conveniently. The *pad* of the tourniquet (or the compress under any substitute that may have to be be used), should be fixed on the artery as high up as is necessary to give room for the operation. The *brachial artery* lies near the surface, and may easily be compressed against the humerus at any part of its course. Near the elbow it lies in front of the brachialis anticus, but runs up obliquely toward the axilla, having afterward in front of it, the biceps and corraco-brachialis, and, behind it, the triceps with the insertions of the latissimus dorsi and teres major.

FIG. 97.

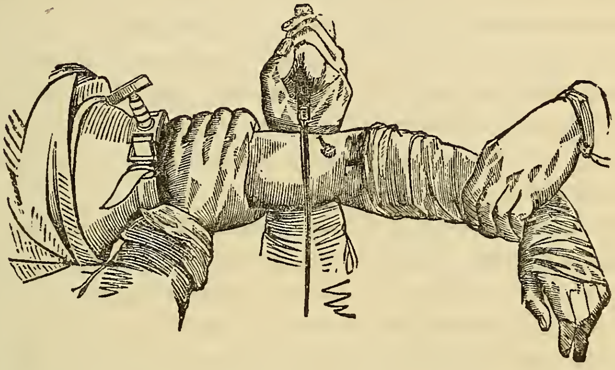


The patient is seated in a chair, or laid, in a convenient posture upon a table or bed. One assistant has hold of the forearm to support and steady it, while another grasps the arm with both his hands above the part to be operated on, and pulls back the integuments as tight as possible. If the

Circular Operation

Is the one to be performed, the surgeon, knife in hand, passes his hand under the patient's arm, bringing the knife completely over it toward himself, with the point downward (see the position of the hands in Fig. 98, representing the commencement of the operation on the left arm); and proceeds with his first incision, drawing the blade backward from hilt to point, completely round the limb, merely cutting through the skin and superficial fasciæ. The instrument is then laid aside or handed to an assistant, and the integument loosened from the muscles beneath by detaching the cellular membrane with scalpel or bistoury. The skin is now forcibly retracted further up, and another incision made, in the same manner as the first, as far up as the skin will permit, dividing all the flesh down to the bone. It is perhaps better to make both incisions somewhat elliptical—or rather twice, varied from the circular direction—leaving the muscles longer both before and behind than at the sides.

Fig. 98.



The next step is to separate the muscles from the bone for an inch or two, with the point of the knife (if a pointed one is used) or a scalpel; and apply a two-tailed retractor (which is made by slitting to its middle a common bandage or strip of muslin, about a yard long and three inches wide). The broader end is to be placed on the under side of the arm, passing the two tails up on each side of the naked bone and crossing them at the top. The flesh is pulled up as far as possible on the bone by an assistant, who retains it there by holding the ends of the retractor. A cut is then to be made all round the bone, close up to the retracted muscles, for the purpose of separating the periosteum. In commencing with the saw, place the heel on the bone where the periosteum has been thus separated, and draw it back so as to have a slight groove for the forward motion. Then saw away steadily, but lightly. Let there be no roughness or hurry in this part of the business. The operator should have hold of the arm above the saw, while an assistant steadies the forearm, till the bone is divided and the severed limb quickly put out of sight by the latter. The last few strokes of the saw should be short and gentle, to avoid splintering the bone. Should any splinters nevertheless occur, they are to be carefully removed by the bone-forceps or nippers, and the end of the bone made smooth.

The retractor is now to be removed and the brachial artery taken up and tied. This is done by seizing the end of it with the forceps, and holding it while the ligature is applied. Before that is done, however, the nerve or nerves (according to the part of the arm divided), should be separated from the artery with the fingers or the handle of the scalpel; or the cellular membrane which connects them may be cut off. This separation should go no further than is absolutely necessary to make room for the ligature (see page 578). Pulling at the artery for this purpose should be gently done, as it is the most painful part of the operation; but it may save the patient many an after pang of the most intense neuralgia, to which he will be forever liable (as well as the immediate risk of tetanus), if the nerve is bound up with the coats of the vessel. Should there be any difficulty in *finding* the artery, in consequence of its retraction after division, the tourniquet is to be loosened a little, when a jet of blood will betray the spout. Seize it immediately and renew the pressure above, till the ligature is applied. Then unscrew the tourniquet, and if there be any *arterial branches* necessary to be secured, the flow of blood through them will determine the fact as well as their location.

As soon as the veins have ceased bleeding, let the stump be cleansed from all coagula, and *dressed* in the following manner: The flesh must be drawn down in mass over the end of the bone, and the edges brought together in a horizontal line across the middle of the stump. There will be no necessity in this case for any sewing. The common adhesive plaster of the shops is sufficient, the straps to be about three-fourths of an inch in width, and long enough to turn over for four or five inches on each side. Place the first across the middle of the seam, taking care to have the edges of the wound exactly adjusted. Another is then fixed on each side of the first, at about a quarter of an inch distance, and more, if necessary, to keep the edges together in the horizontal line. One end of the ligature should be left long enough to hand out between the straps; and some further space should be allowed between each for the exit of any matter that may form. Two straps should be laid obliquely across the others, covering and pressing down the corners, so as to make a round smooth surface. Narrower straps may be applied, if necessary, to close any part of the lips that, having been left free, seem inclined to gape. Lastly, have one strap to go round the arm, binding down the ends of all the others; but not so tight as in the least to retard the circulation.

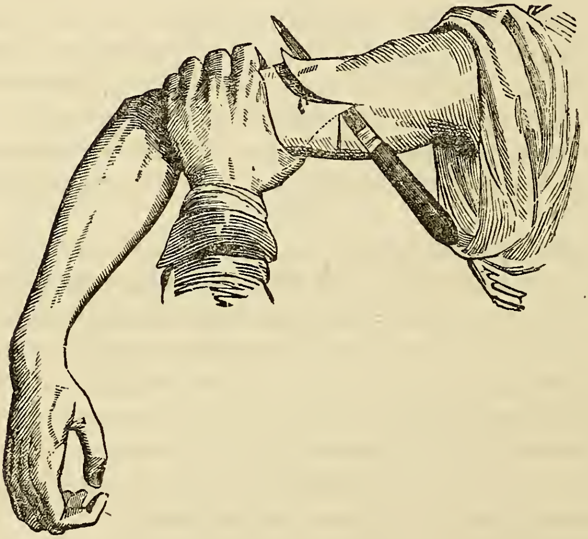
Over the straps, the end of the stump should be covered with lint or cotton, kept on by a bandage lightly applied—but evenly and so as to prevent the adhesive straps from being loosened by any lotions that may be needed—taking care again, however, not to obstruct the circulation. Let these dressings be kept constantly wet with cold water, or medicated cooling lotions, should the tendency to inflammation require them—such as spirits and vinegar and water, or, in bad cases, the Salt and Camphor lotion—(see page 680).

If no disagreeable symptoms occur, the first dressing may be left on for several days, any discharge that exudes being simply wiped away from the straps. In from four to five days, according to circumstances—the amount of the discharge, feelings of the patient, etc.—the dressings should be removed. The straps are to be taken off one by one, the edges of the wound being carefully supported by the hand of an assistant, to prevent their falling apart, as the adhesion at this time will be but feeble. In this way, the dressings may be renewed from time to time, until the healing process is complete. Care must be taken, however, not to disturb the ligature for six or seven days. After a week, it may be gently pulled, and if it seem to move easily, taken out. But if it still appear firm, let it alone. No force need be used: it will eventually come away of itself. These directions presuppose the silk or linen ligature. It is better to have it made of animal membrane, as that will lie soft in the wound, and may be wholly absorbed. The pain attending traction of the ligature upon the arteries is peculiar and most excruciating.

FOR THE FLAP OPERATION

The patient is placed in the same position, and the forearm bandaged and held by an assistant, as for the circular method. It is still best to have another assistant to draw back the skin, just as before directed—as this will obviate the accident of having muscle protruding between the skin of the flaps, which frequently occurs when the precaution is neglected. The flaps themselves had better be taken from before and behind than from the sides.

FIG. 99.



The point of the knife is entered at one side, with the blade held horizontally and passed on, penetrating directly to the bone. It is then turned a little forward—the muscles being drawn up in front—and pushed over the bone, or rather half round it, the point being depressed and emerging from the other side, just opposite to where it entered. By proceeding in this way, the bloodvessels are left behind the knife, to be divided when the second flap is cut. When the blade is fairly through, with the edge looking toward the elbow, it is made to cut downward and outward to the surface, making the first or front flap about two and a half or three inches in length. The point is then re-entered in the wound about three quarters of an inch below the former point of entrance, passed on to the bone, round it behind, and cut through the former wound a little lower than before.

The edge is then brought downward and backward to the surface, making the posterior flap of equal length to the anterior. The flaps are now held firmly back by the assistant, and the edge of the knife made to sweep round the bone, to detach any remaining fibers. It is still better to detach the muscles from the bone, with a scalpel or bistoury, a little further up, and to hold back the flaps with a retractor, as in the circular operation, though it is not here so essential. The periosteum is then to be separated as before, and the bone sawed off as high up as convenient.

The *artery*—which, in cutting according to the directions above given, will generally be found in the posterior flap—being secured, and the tourniquet removed, the wound is cleansed, and the edges of the flaps brought exactly together, and secured by adhesive straps. There will be less tendency to gaping of the wound, or protrusion of corners, than in the former operation. If the proper judgment be exercised, the flaps may be made to meet in a line across the middle of the stump. This, however, is far from being the case with many operators. I know one distinguished surgeon who, in three or four successive flap operations, was obliged to *trim* the flaps, in order to make them meet. This had better be done than to leave badly fitting flaps; but it looks very cruel as well as awkward; and every surgeon should have *eye* enough to avoid the necessity for it. It would certainly be better for the Professor alluded to, to take a lesson on *pattern-making* from his tailor, and mark his *cloth* before cutting. Indeed, I would recommend this to beginners, at least: have a piece of paper long enough to go round the limb, and broad enough to become a model of the flaps; fold it twice, and cut off one of the corners nearly circularly from the opposite one, as a center. The paper being unfolded, may be reapplied to the limb, and flaps marked out with a pen, which *must* come equally together.

The directions about the *ligature* and *dressings*, given for the circular operation (page 699), apply equally in this case. It is still more necessary that the straps and bandage should keep the larger fleshy mass of the flaps together.

OTHER TREATMENT, after amputation, does not differ from that of any other incised wound. The peculiarity of the case, if any, is rather *constitutional* than local. The removal of a considerable part of the limb, necessarily *tends* in some degree toward plethora in the smaller system left, supposing the stomach, heart and lungs to produce and elaborate as before. This has been noticed in some cases to occasion a complete and not unfavorable change in the person's constitution. Generally, however, the whole physiological system appears to accommodate itself to the new state of things with surprising facility; though it is long before the individual's mind is so reconciled as to acquire a familiar consciousness of his new bodily condition. He is often caught in the attempt to walk on the leg or strike with the hand—that is in the grave!

LECTURE LIV.

AMPUTATION OF THE FOREARM, HAND AND FINGERS.

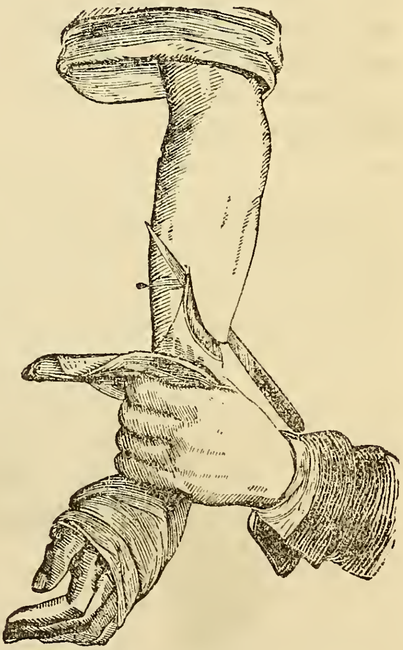
OF THE FORE-ARM.

THE CIRCULAR AMPUTATION is performed in the same manner as described for the arm above the elbow, except that the *interosseous ligament* must be separately cut with the point of the knife, and that a *three-tailed retractor* has to be used, one strip passing between the two bones. The operation is, in respect to ligating and dressing, the same as in

The Flap Method,

Of which a plate is given. The patient being in a convenient position, and the brachial artery secured by tourniquet as directed for operating on the arm, the forearm is steadily supported by an assistant in a position between pronate and supine, that is, with the thumb upward; or the surgeon may so hold the wrist in his left hand while operating with the right, while the assistant, or another assistant, draws up the integument. Make your posterior or external flap first. Having previously had the integument stretched back as far as possible by an assistant, enter the knife, with the edge toward the hand, at the radial side of the arm. When the point reaches the bone, gently rotate the hand a little inward, and push the point on close over both bones, taking care not to let it enter between them (a piece of awkwardness that has happened)! As the blade passes over the *ulna*, rotate the radius *outward* a little, so as to bring the point out further down, under that bone. Then cut downward and outward, so that the edge may emerge at about an inch and a half below, and at equal distance from the points of entrance and emergence. The external flap is now to be raised a little; and the knife entered again at the former point, or a line or two below, and pushed through close in front of the bones, emerging at the same point as before (as represented in Fig. 100). Then bring the edge obliquely downward, leaving a second flap of similar shape and the same as the former.

Fig. 100.



Both flaps are then to be drawn a little up, all the textures attached to the bones separated and the point of the knife passed *between* the bones for the same purpose. The flaps are to be drawn still further up, out of the way of the saw, by the hands of an assistant; or the three-tailed retractor may be used in this case also, though it is not so necessary as in the circular operation. The saw is to be applied, as before directed, but in such a direction as to cut through both bones together, special care being taken as you get nearly through, not to splinter either of them.

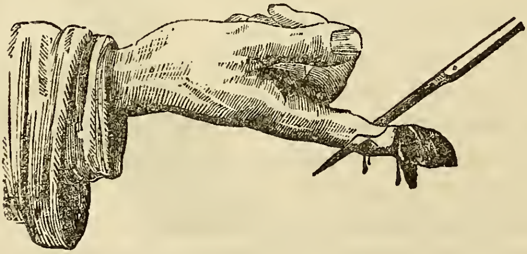
The arteries are then to be separated from the nerves and taken up. The radial, the ulnar and interosseal arteries should be all three tied. The last named may not be easily found without loosening the tourniquet for a moment. After it and the other two are secured, loosen the pressure again, and if any large branches seem to bleed too freely and do not stop on the application of cold water, take up and tie them also in the same manner as the main trunks.

Dress the stump in the same manner as directed for the upper arm.

Of the Fingers.

The necessity for removing a finger, or part of it, most commonly arises from its getting crushed in machinery or burnt with gunpowder. I am fully aware that the operation is frequently resorted to without necessity. If you use proper means and care in curing the wound, you will very rarely have to amputate. When this can not be avoided, it should always be an object with you to preserve as much of the finger as possible. The stump of one joint, or even part of a joint, may be of considerable use. Not a joint can be lost from the hand, without injury to its power as well as appearance.

Fig. 101.



An assistant grasps the wrist, and the surgeon, if about to amputate at a *joint*, and by the *flap* method, seizes the finger, (it having been previously wrapped with a bandage, and the others separated from it), and bends the joint at a right angle. A semi-lunar cut is made on the back of the finger, from side to side, a quarter of an inch below the joint. The joint is opened at its lowest point with a scalpel or bistoury. The knife is passed up to the joint and completely through it, so as to divide the lateral ligaments—when of course, the bone is dislocated. The knife is still carried behind it, and as the finger is straightened, made to cut outward and toward the end of the finger, so as to leave a flap on the inner or palmar side long enough to cover the stump (see Fig. 101).

The digital arteries may bleed considerably, but can generally be stopped, without a ligature, by cold water. If not, you can close them by twisting with a pair of forceps, though I prefer tying to this torsion. When all bleeding has ceased, the wound is washed clean and the surface of the finger made quite dry, the flap thrown over the end, its edge brought up exactly to where the other side was first cut, and the whole secured with straps. A little lint is then placed over the stump, a bandage applied round the finger and hand, and the hand supported in a sling. The stump generally requires to be kept wet with cold water.

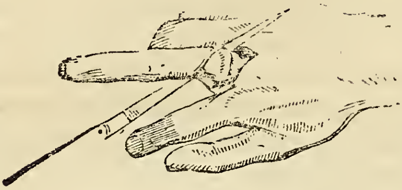
It may not always be convenient to cut the flap from the palmar side of the finger, in which case the hand should be reversed and the operation commenced from the palmar side, enough of the integument being left on the back to cover the stump.

In the *circular* amputation an incision is made round the finger, at the distance of a half or three-quarters of an inch below the joint, and the integuments dissected up to it, having previously drawn the skin up as far as it would go. The joint is then separated and the operation completed as before directed.

Amputation BETWEEN THE JOINTS is performed by either method. The difference is not great. The skin should be retracted as far as possible in either case, and the incision made at a proper distance below the point where the bone is to be divided. Another way is, after making the circular cut, to make also a longitudinal one on each side, toward the base of the finger, and then dissecting up sufficient flaps from before and behind to fold over and meet across the center. The bone can be divided by the bone-forceps, or the finger saw may be used.

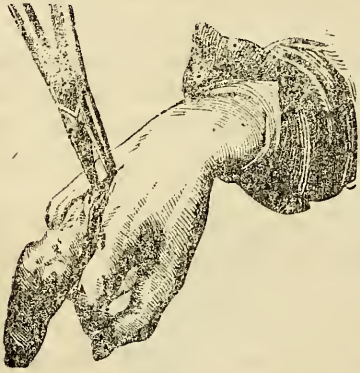
Amputation at the BASE of the fingers, or at the *phalangeo-metacarpal* articulation, is effected by making an incision upon the knuckle in an elliptical form around the finger, terminating at the point of commencement. Make it extend down upon the palmar surface of the finger for an inch, or far enough to make a flap that will cover the joint. The tendons and ligaments can then be cut through, the bone dislocated and removed by passing the knife through the joint (Fig. 102), and the operation completed as in the case of any of the lower joints.

FIG. 102.



The METACARPAL BONES are amputated by making an incision through the integuments directly over the bone, commencing above the point where it is necessary to amputate, and carrying the incision down, diverging as you go to one side of the articulation, and then along between the fingers and to the requisite distance on the palmar surface, where it is met by another incision passing by the other side of the articulation. These lines are somewhat curved so as to meet when the bone is taken out. Then divide the tendons and fasciæ at the point of amputation, and lay bare the bone as much as possible for its whole circumference, keeping the knife always in contact with it. After having bared the bone for nearly its whole surface, it should be cut off with Liston's bone forceps (represented in the act of nipping, Fig. 103) and then completely dissected out.

FIG. 103.



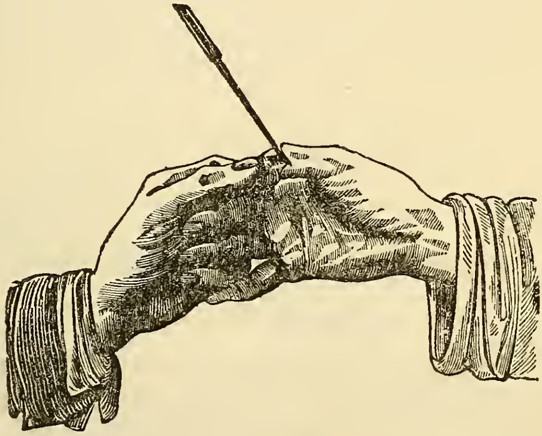
This operation is very severe, and rarely, if ever necessary. The disease or accidents for which it is enjoined may be remedied or cured under almost all circumstances. I have never been obliged to perform it, nor do I expect that I ever shall be.

The arteries must be taken up and tied—the bleeding can not be otherwise arrested. The lips of the wound are brought together by adhesive straps, lint and bandage applied, the part kept constantly wet with cold water, and the hand supported in a sling. It is best in such cases to keep the fingers forcibly straightened by a splint under the palm of the hand, as they are inclined to cross each other.

The Thumb

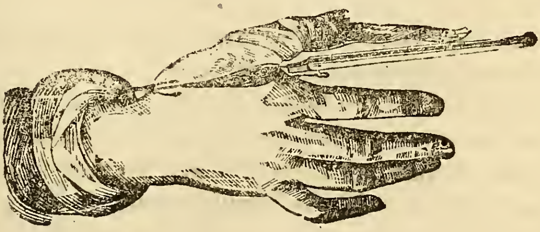
Is amputated between the joints, or at either of the two phalangeal joints, in the same manner as the fingers—(see Fig, 104, and directions, page 704).

Fig. 10.



For the *carpo-metacarpal* AMPUTATION OF THE THUMB, begin an incision on the back of the hand, a little above the upper extremity of the metacarpal bone of the thumb, continuing it down

Fig. 105.



between the thumb and fore-finger. Introduce the point of a narrow bistoury or scalpel at the lower extremity of this incision, passing it up under the metacarpal bone, so as to bring the point out where the first incision began (see Fig. 105), with the edge looking toward the end of the thumb. Then cut outward and downward, so as to make a good flap from the palmar surface to cover the part after the bone is removed. The bone can be readily separated from the trapezium and wholly removed. To arrest hæmorrhage, it will generally be necessary to take up one or more small arteries. Secure the flap in place by adhesive straps, apply your lint and bandage, and support the hand in a sling.

LECTURE LV.

AMPUTATIONS OF THE LOWER EXTREMITY.

Of the Thigh.

All necessary arrangements being made, your instruments at hand, and your assistants ready with proper instructions, the patient is placed in a convenient position on his bed, or a table covered with folded blankets. If you conclude not to remove him from his bed, he must be on a mattress, or boards suitably covered. The limb to be operated on should project over the edge of the bed or table, while the other is fastened by bandages to some fixed point, or firmly held by a strong assistant.* After everything else is ready, the patient is rendered insensible by some anæsthetic agent—if that measure is deemed advisable—and the operation immediately begins:

The tourniquet is applied with the pad over the femoral artery, just below Poupart's ligament, and screwed down so as to arrest the circulation at the moment when the surgeon commences his incision. If the *circular* operation is preferred, it is proceeded with in a similar manner to that described for the arm. As, however, the *flap* operation is now more common, we will describe it more minutely.

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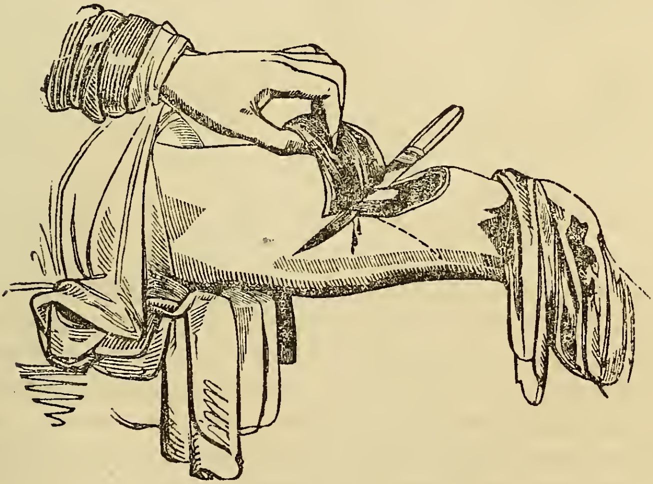
* This and other similar precautions will be unnecessary, if the patient is properly under the influence of Ether or Chloroform.

The operator stands on the outside of the limb to be amputated, if it is the left leg; and on the inside, if the right. He grasps the flesh of the anterior part of the thigh, raising it from the bone; and passes his knife horizontally through it, the point directed toward the bone till it touches, then inclined over it and down again on the other side as far as possible. After the instrument is through, the edge is brought out, upward and forward toward the knee, so as to leave the anterior flap of the required length, according to the thickness of the limb. The knife is now entered again a little below the top of the former incision, passed behind the bone as close to it as possible, and brought out on the other side just below the former point of emergence. The *posterior flap* is then cut (in the direction represented by the dotted line, Fig. 106) a little *longer* than the anterior, as the flexor muscles are more liable to retract than the anterior—being larger and stronger and less firmly attached to the shaft of the bone. The flaps being now drawn back, and held by an assistant, the remaining muscular fibers are severed by a sweep of the knife round the bone; and the bone sawed off close up to the base of the flaps (see Fig. 107), the surgeon steadying the lower portion of the bone with his left hand.

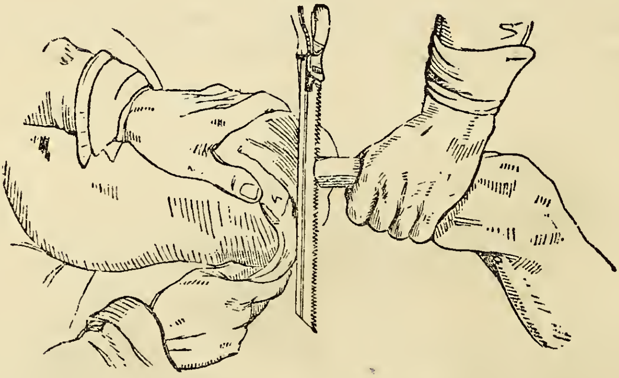
Fig. 106.



Some surgeons prefer to make the flaps from the inner and outer, instead of the posterior and anterior sides of the bone. This may be done with ease in so fleshy a part; and is perhaps a safeguard against the flaps being so directly separable by muscular contraction.

The femoral *artery* will be found—when the operation is performed, as I have described—in the posterior flap, unless the operation is very high up indeed. About the middle of the thigh, it may not be necessary to take up more than the femoral artery. Frequently, however, several branches have to be also secured. To ascertain this and find these branches, loosen the tourniquet for a moment.

Fig. 107.



It is safer—and this is the only difference between this operation and that for the arm—to use *sutures* in securing the flaps. Apply one about the middle of the line of union, and one or two on each side, should they appear necessary. The flaps may gape notwithstanding, and require other means. After adhesive straps have been also appled with lint and bandage, the stump is to be placed upon a pillow a little elevated, and kept wet with cold water.

As a precaution against secondary hæmorrhage, the tourniquet may be left on the thigh, and tightened as soon as any bleeding is discovered. It is sometimes necessary to re-open the wound and secure any vessels that may have been overlooked.

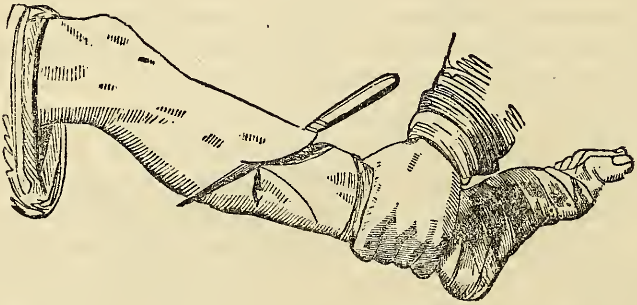
Of the Leg.

The rule for deciding where to amputate for injuries below the knee, is different in the case of a rich patient and a poor one. Amputate, say the authorities, as near the knee as possible, unless your patient be a rich man and able to procure an artificial limb. For the common wooden leg, the knee is the best support, and all the limb left below that joint would not only be useless, but very much in the way, liable to injuries and to suffer from cold. The rule, however, is rather a European than an American one, few patients, in this country, not being able and not preferring, to procure what is called a cork leg. A medium length of stump below the knee (say six or seven inches from the lower edge of the patella), will be enough to secure a firm socket, and thus be convenient either for using the knee joint, or turning the stump back and resting the weight of the body on it. On such a point the patient's choice should of course be consulted.

The patient being in a convenient position, the femoral artery under the tourniquet, and everything ready, one assistant has hold of the ankle and another of the knee, the latter drawing up the skin while he steadies the limb. The operator (standing as before directed for amputation of the thigh) cuts round the limb, just dividing the skin and cellular tissue down *to* the muscles—if it is the *circular operation* that is intended—at least two inches below the point determined on for dividing the bones. (The manner of making this first sweep of the knife is described in Amputation of the Arm, page 697.) The integument is now to be dissected up for two inches in front and one inch behind. This being turned up and firmly held by the assistant, the muscles are separated down to the bone by one second circular sweep of the knife, cutting as closely to the retracted skin as possible, and turning the edge a little upward as it passes through the muscles of the calf. A long double-edged *scalpel* or catlin is then passed between the bones, to divide the interosseous ligament and muscles which have not been touched by the circular cut. Every fiber is then to be dissected from the bones for a little distance higher up, and the *three-tailed retractor* applied, one end passing between the two bones and having the wide, unslit part below. The muscles being drawn up by the retractor, the bones are sawed off together, as in the case of the forearm; any splinters that may (but *ought* not to) be left, removed, and the end smoothed with the bone forceps. In directing the saw, take care to leave the bones of equal length, or if any difference, to have the fibula the shorter (that it may afterward be out of the way of blows, etc. Would not any plan causing adhesion between the two bones of the stump, be a great improvement of the operation?) As soon as the retractor is removed, the anterior and posterior tibial and the perineal *arteries* will require tying, together, perhaps, with several branches. Secure everything and dress as directed for the forearm.

The *flap operation* is by far the best for the leg, as the bones require to be well covered with flesh to protect them from chafing in the socket of an artificial leg, and from blows and cold when turned back on the wooden leg. The surgeon usually commences by entering the catlin behind the bones, cutting forward and downward, so as to make a *posterior flap*, three or four inches in length. For the front flap a semi-lunar *incision* is then made across the limb with the convexity downward, curving from one end to the other of the base of the first flap. [Mr. Liston prefers making this semi-lunar *incision* first. In the plate, Fig. 108, it is represented as already done, and the knife ready to cut the second, here, *posterior* flap.] The skin is dissected up a little; both flaps thrown and held back; the textures between and adhering to the bones separated, and the bones sawed off, as before directed. In transfixing the limb, care must be taken not to allow the point of the knife to penetrate between the bones. (For fuller directions and precautions, see operations on the arm, Lecture LIII.)

Fig. 108.

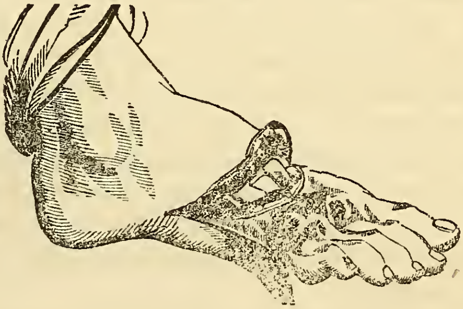


When the operation is performed *lower* down toward the ankle, the tendo Achillis will have to be shortened after the flap is made, otherwise it will be left projecting when the integuments contract. More care will have to be used to get the flap of sufficient size at this part, and it will also require to be secured by sutures. A stitch or two, indeed, had better be used, whether the operation be high or low. In other respects the flaps are to be adjusted in a horizontal line, secured by straps, etc., and the wound kept cool as in other cases. The stump should rest on a soft pillow, and be raised above the level of the body.

AMPUTATIONS OF THE FOOT.

Tarso-metatarsal amputation, or that of all the metatarsal bones together, requires a semi-circular incision across the instep, with the convexity forward, beginning at a point just in front of the articulation of the metatarsal bone of the great toe with the internal cuneiform, and terminating on the outside, at the tuberosity of the metatarsal bone of the little toe. The flap of skin is then to be dissected up and thrown as far back as the tarso-metatarsal articulations; and the point of the bistoury is passed behind the protrusion of the metatarsal bone of the great toe, so as to divide the external ligament which connects it with the cuboides. The dorsal ligaments are then to be cut through in succession and the foot depressed. The other articulations are severed in a similar manner, dividing their ligaments with the point of the knife, taking care that your bistoury is not locked between the bones. The most convenient *order* for taking the joints is, after beginning with the fifth, to separate the third and fourth, then the first, and *lastly the second*—the extremity of the bone being locked between the three cuneiform bones would not be easily dislodged before the others; and it may be sometimes better, for this bone, to

FIG. 109.



use a Hays' saw. When the bones are all disarticulated, the operation is completed by the divison of the plantar ligaments, with the point of the knife, and the separation of the extremities of the bones which adhere to their under surface. The blade is then put under the five bones, and carried forward so as to make a flap from the sole of the foot, sufficient to cover the end of all the tarsal bones (see Fig. 109.) The flap should be from an inch to two inches wider on the inner than the outer side. All the arteries being tied, the wound is adjusted and dressed in the usual manner.

Phalangeo-metatarsal amputation, or that of all the toes from their junction with the foot, is the most common. A transverse incision is made across the dorsal surface of the metatarsal bones, and the tendons and lateral ligaments of each joint are divided separately in succession. The first phalangeal bones are then dislocated upward, and the knife passed beneath their metatarsal extremities, cutting out flaps from their inferior or plantar surfaces, sufficient to cover the ends of the metatarsal bones. Arteries have to be tied and the flaps secured as usual. The foot must be laid in an easy position on the outer side, so that whatever matter is formed may readily escape. As in the case of single toes and fingers, however, it is better to *divide the bone* than disarticulate—taking precaution, by means of the bone forceps, not to leave sharp or prominent edges to the bones. This direction for dividing between the joints applies particularly to the *great* and *little toes*, as they both aid very much in walking.

Amputation of separate *toes* is performed precisely as that of the fingers (see page 705). Occasions oftener occur, however, for removing several at once. Badly managed frost-bites may require this. Hospital Gangrene is another too frequent cause.

LECTURE LVI.

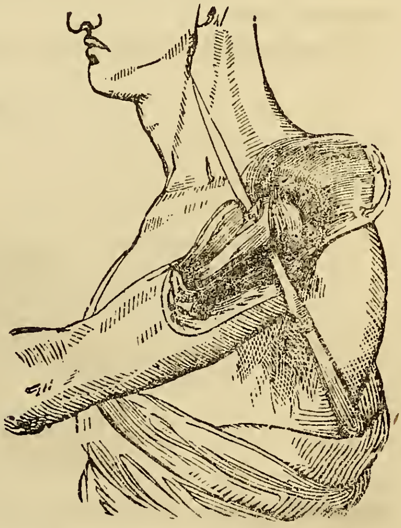
AMPUTATION AT THE LARGER JOINTS.

The arm is removed entire or "excised" from the body at the

Shoulder Joint

In several different ways, by different surgeons; but the one represented in the cut, is now the most generally performed, and is as safe and convenient as any. Place the patient in a sitting posture, supported by assistants, who also sustain the arm in a horizontal, or a little above the horizontal position. A transverse incision is made, down to the bone, about four and a half inches below the acromion process. Two other incisions are made, one posterior and the other anterior, commencing high up on the shoulder, and following the margins of the deltoid down to the extremities of the first or transverse incision. The flap is then dissected up from the bone, turned over the shoulder and held fast by an assistant—who had better have a dry cloth in his hand, as he may not otherwise be able to hold the bleeding part. The surgeon next opens the capsule of the joint, and directs the assistant to make a preconcerted lever-like motion, luxating and raising the head of the bone upward. The axillary artery is then sought for, (at the inner margin of the wound), the nerves completely separated from it, the vessel raised, by passing the aneurism needle (see Fig. 27, page 581) or blunt end of the probe under it, and tied. This done, the

Fig. 110.



knife is passed between the head of the bone and the glenoid cavity, with the edge kept close to the bone, and brought outward and downward (of course below the ligature), below or beyond the level of the arm-pit (see Fig. 110). All smaller arteries are then tied, cold water applied to stop the venous hæmorrhage, and, as soon as that is effected, the deltoid muscles brought down and secured by adhesive straps.

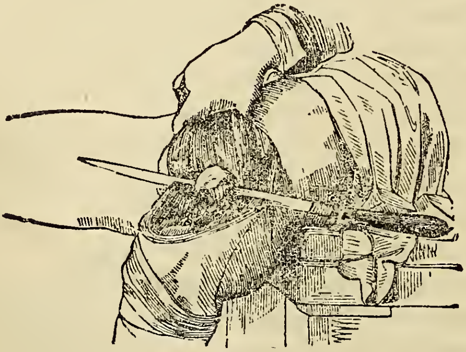
Compression of the *sub-clavian* artery—which is very necessary, if the axillary artery is cut before being tied—is a very difficult matter. If, however, circumstances absolutely require the operation to be performed differently, in this respect, from what has been described, the sub-clavian may be commanded by the thumb of an assistant where it passes over the first rib, in the space between that bone and the clavicle. There is no safety in attempting to control it by a key or any mere mechanical compress there; the assistant can feel when he has hold of the artery or when he has lost it.

At the Hip Joint.

This is the most formidable operation in the whole list of amputations—not only on account of the large extent of surface to be divided, and the large number of nerves and blood-vessels, but the fact that the latter can not all be secured before cutting. Happily the occasions for a resort to this operation are very rare.

The femoral artery being compressed by the thumb of an assistant—the point of the knife is to be entered about half way between the anterior superior spinous process of the ilium

Fig. 111.



and the trochanter major, and then directed through across the front of the articulation, until it emerges on the inside of the thigh. The assistant rotates the limb a little inward, and the knife cutting downward is brought out in front, so as to form a suitable anterior flap. The assistant then abducts the thigh and presses it backward, another holding up the anterior flap, when the capsular ligament is divided in front; and the head of the bone being dislocated by a lever-like motion, the round ligament is severed, and the blade of the knife brought behind the neck of the bone, passing through the posterior part of the capsule (see Fig. 111). The posterior flap is then formed by cutting downward, and outward. The vessels upon the posterior flap are to be tied before any others, as these are large, and bleed most profusely. They must be secured as soon as possible, and those of the front flap also attended to.

Another mode of performing the operation is, to make lateral flaps, by first passing the knife completely through the limb, on the inner side of the joint, and then carrying it forward, so as to form a flap of the adductor muscles. The joint is then cut into, and the ligaments severed, together with the muscles attached to the digital fossa. The surgeon here makes use of a strong curved knife, which is brought downward and outward, so as to make the external flap.

The vessels are then to be secured, venous as well as arterial hæmorrhage suppressed, and the flaps brought together and secured by sutures, adhesive straps, compress and bandage.

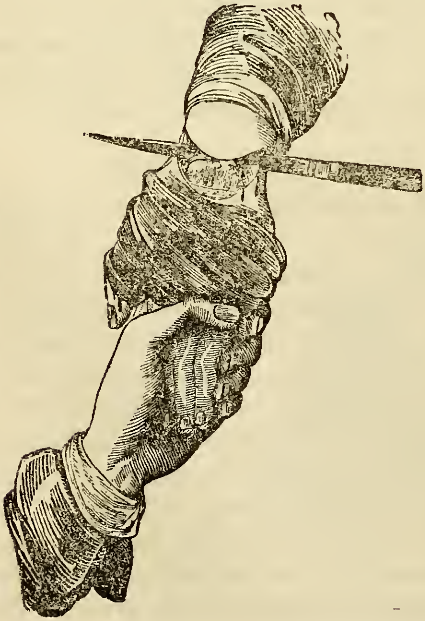
AT THE ELBOW, WRIST, KNEE AND ANKLE.

Excision—as the operation is called, to distinguish it from ordinary amputation—has been performed at each of those joints; though at all of them (except the wrist) it is liable to so much objection, that it is difficult to imagine cases where it *ought* to be preferred. The rule laid down by Druitt, from the first volume of Guy's Hospital Reports is, that *excision* is "advisable in the shoulder and elbow [?]; admissible, though of doubtful utility, in the ankle; inadmissible, except under very peculiar circumstances, in the wrist, [?] hip or knee." From this conclusion, I differ, as you will see, in two points.

The ELBOW JOINT ought never to be chosen for the point of division on account of disease of the forearm, when the smallest portion of the latter, if only an inch, can be preserved. That much of stump, with the use of the joint, will for many purposes, be as good as a finger to the patient. Disease of the joint itself would be only an additional reason for cutting above, even if the humerus and integument enough to cover it were sound and preservable. The broad condyles of the humerus, with a thin covering—a mere skin and bone extremity—could be no advantage over the round section of bone, well protected, like the natural fingers' ends, with flesh as well as sensitive cutis. Besides, the flap over the uneven end of the bone can not possibly be secured as smoothly and heal as kindly as in ordinary cases.

When performed, the surgeon passes his knife through the muscles in front of the joint, and cuts downward and out to the surface, so as to make a flap of them. He then makes a transverse incision behind the joint, through the external lateral ligament; and brings the instrument into the joint, between the head of the radius and the external condyle, to divide the internal and other ligaments. The olecranon process is then sawed through, the head of it being left on the stump. The vessels are secured and the stump dressed as in other cases.

Fig. 112.



Amputating at the wrist may be preferred, because more covering can there be sometimes secured from the thumb and palm than from off the bones above and because it leaves a stump termininating in two firmly connected ends of bone. After describing the usual mode of operating, I will relate a case where I resorted to this method *not* "under very peculiar"—at least not *favorably* "peculiar circumstances."

For this operation, the brachial artery should be secured as for amputations of the arm above. An assistant supports the forearm, and draws back the skin from over and under the wrist. A semi-lunar incision is then made, with the convexity downward, on the back of the hand; the flap dissected and turned up past the joint, and the joint opened from that side. The ligaments and tendons are freely cut through, and disarticulation effected, the knife being carried through the joint, (see plate, Fig. 112) and downward and forward on the inside. The Palmar flap should be the longer, as it is thicker and better than the other. Arteries have to be secured and everything completed as in other cases.

On the 5th of June, 1849, David Howell had his hand and wrist terribly mangled in the planing machine, at Holmes's factory on Seventh street. Not only were the carpal, as well as meta-carpal and phalangeal bones literally crushed, but the extremities of both radius and ulna, severely bruised and divested of much of their covering. Instead of amputating the arm, I merely took away the hand and wrist bones, smoothing off the bruised ends of the radius and ulna, as well as the ragged portions of muscles and tendons hanging to them, but taking care to have the ligaments connecting the two bones untouched. As there was no flap to be got from the hand, I drew down the skin of the forearm by main force, and fastened it over the end of the radius by two sutures and a sufficient number of adhesive straps. To keep it close in place, I put a large cotton wad over the end; and, as a security against contraction, applied a bandage firmly over it and up to the elbow. The stump was kept constantly wet with a solution of common Salt, combined with an equal quantity of spirits of Camphor. The healing went on well and rapidly, without ever giving the patient pain after the first two or three hours, almost the whole surface forming adhesion by the first intention. Only two spots, not the size of a five cent piece, required granulation. The limb was entirely well in a few weeks, a smooth and beautiful stump being formed, which the patient, by an ingenious contrivance of a loop and clasp, is able to use among the machinery almost as efficiently as a good hand.

Excision at the knee would seem, plainly enough, inadmissible, without the experiments relied on in the Hospital Report before quoted. The patient could never walk on the half knee as on the whole one, and would find it very difficult to adjust it in any socket for bringing the weight to bear higher up, besides its preventing an artificial knee being substituted. Similar objections apply to

Amputation at the ankle joint. The patient can not walk on the stamp nor fix an artificial foot so well as if the leg were divided higher up. The stump is not likely to be so well covered, or to heal so kindly, and the operation itself is more tedious and painful to the patient. Therefore when the whole foot must be lost, amputate *the leg* (for the choice of place, see page 711).

LECTURE LVII.

OTHER OPERATIONS ON THE EXTREMITIES—TENOTOMY, MYOTOMY.

The arterial trunks of the extremities have occasionally to be tied for wounds as well as disease. [For cases requiring these to be secured above the limb, see directions for taking up the Axillary and External Iliac Arteries, Lecture LXI.]

The brachial artery has occasionally to be tied, or otherwise obliterated, in consequence of a wound in the favorite operation of *bleeding* at the usual point (see treatment for aneurism, varicose aneurism, etc., pages 578 and 580.) Whether this "false" or *artificial* "aneurism" has followed the occurrence or not, you should, if called to such a case (for *you*, of course, will never have to mend such blunders of your own making), adopt efficient means of compression, bandaging in addition the whole arm; or cut down to the artery above and below the wounded part (enlarging the original wound if it is a fresh case, to the extent of two or three inches), and tie it, taking care not to operate on nerve and vein, as the original venesector did on the artery. When to be taken up above this point, the brachial artery is as easily found as for the purpose of mere compression (see pages 568–9). Cut down carefully along the border of the biceps, or if going still higher, that of the coraco-brachialis; see that no vein or nerve is included in your ligature, and that there is no higher branch going off to the part affected, and tie.

The RADIAL ARTERY is to be found—on the upper part of the forearm, by cutting on a line from the bend of the elbow to the thumb, and separating the supinator longus and pronator teres—in the lower part, where it is pressed against the bone in "feeling the pulse" along the margin of the flexor carpi radialis—and nearer the middle, by making the incision near the ulnar margin of the supinator longus. The ULNAR ARTERY is not so easily reached in its upper part, and it may be better to tie the brachial than cut the thick muscles that lie over it. Above the wrist, however, and for more than half its course you have only to divide the integuments along the outer margin or tendon of the flexor carpi ulnaris, separate this inward, and pass your needle *from within* to avoid the nerve.

The FEMORAL ARTERY is most conveniently found by ligating just above where it is crossed by the sartorius, the course of the vessel running from the middle of Poupart's ligament to the inner edge of the patella. In cutting, carefully avoid veins and enlarged glands; and after introducing your ligature by passing *the needle* (see Fig. 27, p. 581) from the inside outward, close to the coat of the artery, so as to separate it from the great vein and saphenic nerve, ascertain that there are no such branches from above as would render the operation useless—and then tighten and tie. The POPLITEAL ARTERY has been occasionally tied, where it lies under the tendon of the semimembranosus.

The ANTERIOR TIBIAL ARTERY is only to be reached, in the upper part of the leg, by a long and deep incision down to the inter-osseous ligament, the tibialis anticus and the extensor digitorum being separated—in the lower part, by cutting on the outer side of the tendon of the extensor pollicis. The POSTERIOR TIBIAL ARTERY can be easily secured in the lower part of the leg, but only with so much difficulty in the upper part, that it is perhaps better for any one not a practiced anatomist and operator to go up to the Femoral at once. It is conveniently operated on either just behind the internal malleolus, or for some distance higher up along the inner side of the tendo-Achillis. The PERONEAL ARTERY is almost as difficult to meddle with as the *upper* part of the *tibiales*.

Wounds and diseases of the VEINS in the extremities should be treated by *pressure* rather than the ligature, though the latter may be necessary (see page 126). In these and many other cases the proper application of the *bandage* is one of the most important of

"Surgical operations on the extremities." All other affections or accidents of the extremities, of any frequency or importance, for which operations may be thought of, have, it is believed, been mentioned; and directions given for performing or *avoiding the operation.* Exostosis, or malignant disease in those parts, will require to be treated on the same principles as elsewhere (see page 214). In affections of the bursæ, ganglia and other tumors, operations may and generally ought to be *prevented* (see pages 208 and 209). Such an operation as is sometimes called "paracentesis articuli," I shall, of course, give no directions for, as it is at best but a palliative, and its advantage can never compensate for its danger (see Treatment for Hydrops Articuli or White Swelling, pages 175 and 177). Of deep puncturing in THECAL ACCUMULATIONS enough was said under Whitlow and Felon (page 546.) When resorted to with a view of *preventing* tension and suffering, the injury done is often great. The same may be observed of ONYXIS or ONYCHIA as of paronychia. "*The* operation for inverted Toe-Nail" need only be referred to, for the purpose of calling to your mind the plan for obviating, not only what an established author well characterizes as the "frightfully painful way [of treating] laid down by Cooper and Dupuytren—that is, in passing the sharp blade of a pair of scissors under the nail, cutting it through, and then tearing away the offending portion with forceps"—but even what he calls "the milder fashion, by cutting through the nail with a pen-knife, just down to the thick layer of cuticle intervening between it and the *quick* (as it is called) and then turning it back."—(Druitt's *Modern* Surgery, page 516.)

MALFORMATIONS of the fingers or toes may often admit of surgical remedy or palliation. The particular case must indicate the kind of operation required. Supernumerary fingers and toes, if really found superfluous, and not rather useful to the possessor (I know a physician who prizes his "sixth finger" very highly) may be easily removed, as they are not generally attached by regular articulation.

WEB-FINGERS might seem a case requiring only surgery so simple as not to need directions—yet we find some books proposing to make a rhino-plastic or dactylo-plastic operation of it! The difficulty sought to be avoided, is that of reunion after division. A piece of common silk, moistened in Olive Oil, and kept between the fingers after their separation, will effect the object, without ever having a "flap of skin brought from the dorsum of the hand and engrafted between the fingers." The author quoted does not say how the greater deformity resulting from the scar on the back of the hand is to be remedied.

Contraction of the flexors is the most common deformity requiring our aid. In the case of fingers, a mere cut through the skin will often be all the "operation" necessary. The same, with other obvious means, would probably be sufficient for most cases of toes so contracting or overriding each other—for the inconvenience of which even amputation has been enjoined and submitted to. Recent cases of such "spurious anchylosis," even in the larger joints, may be *made* "transient" by emollients and other obvious medical or mechanical means.

In other cases, however, MYOTOMY OR TENOTOMY will have to be the remedy. The most prominent instance for this is the club-foot operation. Similar conditions of the upper extremity or "club-hand" are occasionally met with, not so susceptible of being classified.

Club-foot—(Talipes.)

There are four varieties of this deformity:

1. *Talipes varus*, which is by far the most common. In this the foot is turned in; the patient walks on the outside of it, the great toe turns inward and upward and the heel is elevated. The cause of this deformity is the contraction of the muscles of the calf of the leg and the adductors of the foot.

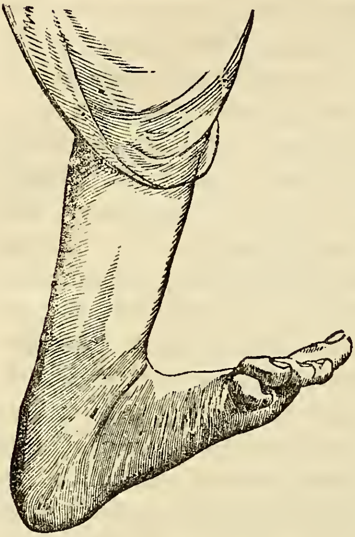
2. *Talipes equinus*. The heel is elevated from half an inch in some cases to four or five inches in others. The patient walks on his toes or the ball of his foot. He may press principally on the side of the little toe, on that of the great toe, or on all of the toes equally with the ball. This is generally caused by the contraction of the *gastrocnemii* muscles alone, but the flexors of the toes may also be contracted.

3. *Talipes valgus*. The foot is turned out so that the patient walks on the inner surface, and the external edge is raised from the ground, the sole looking outward. The heel is also drawn

upward in this case. The adductor muscles and those of the calf are contracted.

4. *Talipes calcaneous* (Fig. 113). The toes and foot are elevated, so as to form an acute angle with the leg, while the heel rests upon the ground. Here the *tibialis anticus*, and the extensor muscles of the toes, are contracted.

Fig. 71.



Any of these deformities may be caused by disease or accident, but are most frequently congenital.

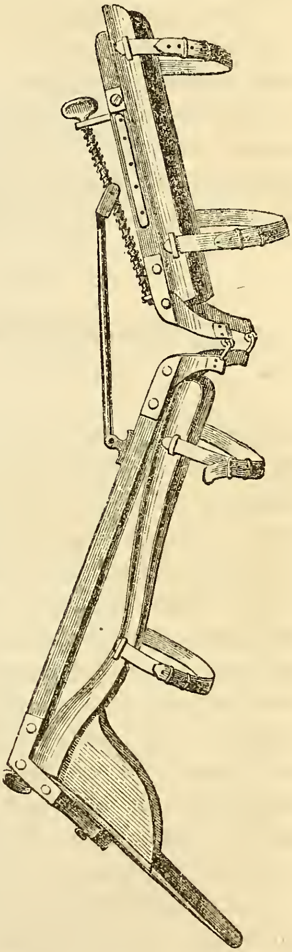
Treatment should be resorted to as early as possible. Whether congenital or accidental, the proper treatment adopted and carried out at the first discovery of the deformity will stand a very great chance of success. But a few years' delay may effect such changes in the bony structure as to render *any* attempt, by operation or other means, abortive.

Although in many cases the operation of tenotomy may be absolutely requisite, it does not follow that other means might not have succeeded in the same cases, had they been applied early.

The strong probability is, that a large majority of cases occurring under the age of three years *require* no operation, as the proper apparatus early applied will rectify the deformity. The great success of Dr. Chase, of Philadelphia, in these cases proves, at least, that the operation is performed far too often, if indeed, it is ever necessary in the early stage of the deformity.

I can not attempt to describe all the forms of apparatus necessary for every variety of club-foot. I will simply say that it should consist of a stiff shoe or sole, fixed to a stiff upright shaft, made fast above the knee with a joint at the knee. The shoe is so fixed as to turn easily in the proper direction. The foot is made fast to the sole, to which springs are attached from the upright shaft, in such a manner as to make constant, but gentle extension on the contracted muscles, and in a proper direction to rectify the deformity.

Fig. 114.



I have examined some of these machines made by *Mr. Max. Wocher*, of this city, which are most admirably adapted to the purpose. They can be fitted to any size and shape, so as to cause no pain or excoriation, while the proper force is exerted on the contracted part. All the information he requires respecting the case in order to adapt an instrument to it, is the kind and extent of the deformity, and the length and size of the foot, leg and thigh. I would recommend a trial of this machine or some similar fixture, in all recent cases, before resorting to the

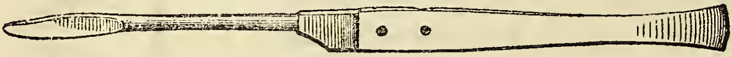
Operation.

This is easily performed. It consists simply in a division of the contracted tendon or tendons. In a large majority of cases a *division* of the *tendo Achillis* is all that is requisite. For this purpose the patient is placed on a bed upon his face, or he may sit in a chair with his foot elevated. The skin of the ankle is drawn either backward or forward so as to make it tense, and so that when it contracts it will cover the wound. A long narrow bladed knife is used (see Figure 115), which is round and smooth for an inch next the handle. It is passed through the skin flatways between the tendon and the bone, near the anterior surface of the former, from one to two inches above the internal malleolus, and carried through to the skin on the opposite side. The edge is then turned upon the tendon, and while an assistant, or the surgeon, with his left hand bends the foot in such a manner as to put the contracted muscle firmly on the stretch, he cuts steadily through the tendon. It will separate with a crackling noise.

The space between the divided ends of the tendon will be filled up with coagulable lymph, which evidently becomes firm and serves as a tendon.

The tendon of the *posterior tibial muscle* is most readily divided about two inches behind and above the internal malleolus. The principles of operation are the same. In this case care must be taken not to cut the posterior tibial artery and nerve, which might be wounded if the incision were carried too deeply. The tendon of the *anterior tibial muscle* must be cut where it passes over the ankle joint. The *flexor* of the *great toe* is most conveniently divided on the sole of the foot. It may be seen and felt projecting like a strong cord.

Fig. 115.



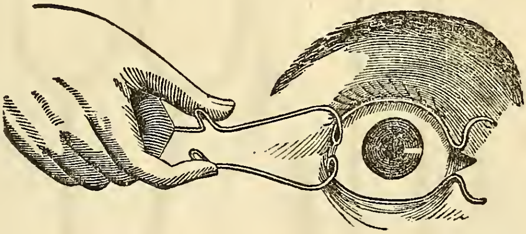
Ater the operation, the limb should be placed in an easy position, and the patient kept quiet. A strip of adhesive plaster is to be placed over the external wound, and it healed by the first intention. In these operations there will be but a few drops of blood, unless an artery be cut, of which there need be no danger, and can not be in the first, and last two cases named. After three or four days, or as soon as the state of the limb will admit, it should be placed in a proper machine for extending the foot and fixing it in its proper situation.

[As the operation for STRABISMUS is similar in principle to this of talipes, and EYE-OPERATIONS form a distinct class, I will now proceed to them, before taking up others on the head and trunk. Myotomy being a modern operation, has been for a time "all the rage"—for instances of this "muscle-cutting gone mad," see page 536, and Flint's Druitt, page 391, with the editor's note, page 329.]

STRABISMUS—SQUINTING.

This striking and unsightly peculiarity of the visual organs commonly consists of their axis of motion being no longer parallel, or in their natural relation to each other. Hence the eyes do not act in harmony, and the person seems to be looking

Fig. 116.



two ways at once. If both eyes have changed their natural axis similarly, or received an equal turn to the same side, the patient appears to be looking away from the object before him, or not looking at what he really sees.

Such states of the eye may be *temporary* or *permanent.* In the former case there is a *spasmodic* contraction of some of the muscles of the globe, virtually destroying the function of their antagonistic muscles. Such spasms often occurring in connection with the cerebral affections of children, are apt to become habitual, and the occasional *squinting* converted into confirmed *strabismus.* This result may be guarded against by mechanical contrivances, such as a dark shade over the affected eye with a small opening for light in the center, or at the point most likely to counteract the morbid tendency.

The *confirmed* squinting is rather referred to the relative relaxation of the muscles not acting, than to the overpowering contraction of the other—which is thus allowed to become organic, or a permanent *shortening.* In a large majority of cases the deficiency of power is in the rectus externus, the internal drawing the eyeball toward the nose.

The operation for the relief of this deformity — or Strabotomy, consists in dividing the shortened or permanently contracted muscle. This being generally the Internal Rectus, I will describe the process of *its* division. The patient being seated and the eye secured by the speculum or otherwise, the sound eye is to be covered and kept from rolling by gentle but sufficient pressure. The lids and ball of the defective side can be best fixed with the Wirespring Speculum (Fig. 123)—

shown upon the eye preparatory to the operation in Fig. 116.

Figs. 117. 120. 118. 119.

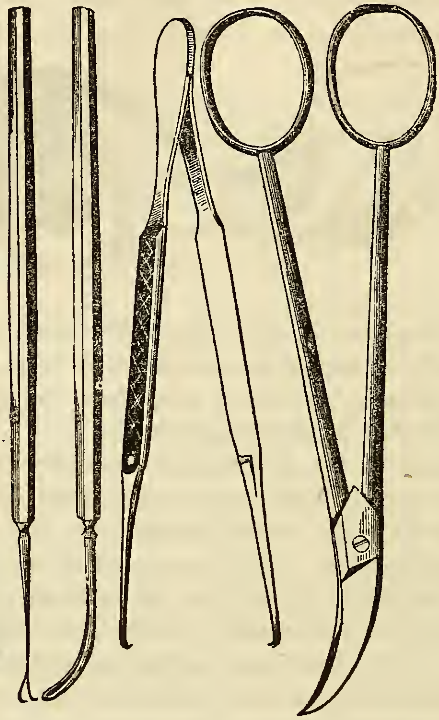


Fig. 121.

Fig. 122.

(See also Note at the beginning of next Lecture, page 730.)

Fig. 123.

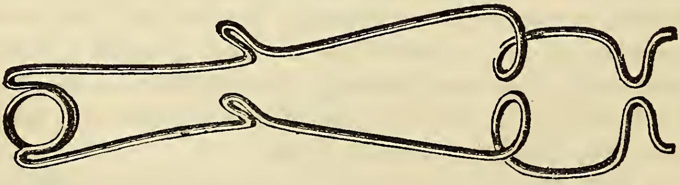
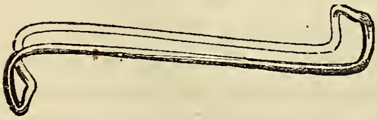
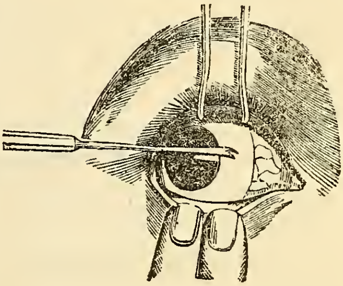


Fig. 124.



In default of such a means, it is usual to have the upper lid held up by an assistant's fingers, or by a common wire speculum or elevator (Fig. 124), another pair of fingers being required to keep down the under lid (as shown in Fig. 125). These preliminaries adjusted, a double hook, represented separately as Fig. 120) is hitched to the conjunctiva, about half way between the margin of the cornea and the internal canthus, the ball then rolled outward by it, and the handle given to an assistant, by whom it is firmly retained in the same position. The surgeon then raises the conjunctiva with fine hook-forceps (Fig. 118), and cuts perpendicularly into it with curved scissors (Fig. 119), and continues to raise it and divide the cellular tissue until he reaches the muscle, which also he severs with the scissors.

Fig. 125.



To make sure work, the cellular tissue should be dissected clean from the ball in a perpendicular direction, for at least half an inch. In order to ascertain that the muscle is entirely severed, let the operator introduce under it a blunt hook or director (Fig. 120) as if to raise it up. If any fibers rise over the instrument divide them.

Then release the eye and let the patient look freely about. If the operation has been complete, he will turn the eye every way, except directly *inward.* If he can do this also, the operation must be repeated or extended. You must dissect off more of the cellular membrane from the ball, and make sure of severing every muscular fiber. On ascertaining that your object is effected by complete loss of the motion proper to the divided muscle,

The *eye* is to be *clossd* and kept from exposure to air, as well as light, for one or two days. It should also be kept wet with cold water, though it is very rare that any dangerous inflammation follows the operation.

If it is a *child* that is to be operated on, it should be rolled up bodily, with the arms imprisoned, in a sheet, and laid on its back upon a table, the head and feet being there kept still by two assistants.

As it regards the *result* of the operation, it may be stated as *generally successful*—though the defect occasionally recurs. The advantage is not always at first very perceptible—the reciprocal action of the muscles requiring time for readjustment. The temporary loss of one muscle will cause the eyeball to project a little more than natural, but not so much as to occasion any appreciable deformity. In most cases the ultimate improvement of *sight* or *looks* is very satisfactory.

LECTURE LVIII.

OTHER OPERATIONS ON OR ABOUT THE EYES.

ALL the qualities of a good operator (page 563) are peculiarly requisite in OPTHALMIC SURGERY, particularly his having good eyes and a steady hand. The anatomy and *surgery* of this complex part of the organism must, moreover, have been made a special study; one should have operated on, as well as dissected, thousands of eyes (luckily, hogs' eyes will answer the purpose of learning on as well as any).

The OPTHALMIC CASE should contain at least the following instruments: The eye-forceps, with interlocking points (Fig. 118); a small spatula and scoop, both of silver; the fine eye-hooks (Fig. 117); Scarpa's curved needle (Fig. 127), and cataract knife (Figs. 129–30); the director or curette (Fig. 120)—to which list I have added the *curved* spring-wire speculum* (see Figs. 123 and 116, and pages 527 and 528).

The *handles* of these instruments should *not* be made round nor of any smooth substance, but purposely roughened and with unequal planes and angles, that the operator may hold them firmly and *feel*, while operating, which way the edge or curve lies. For the latter object, a mark out of some other material is set into the handle of some instruments. It is unnecessary to add that all these articles should be of the best material and workmanship and be kept in the best possible order. Cutting edges should cut loose hair or goldbeater's skin.

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* This instrument I use in all operations upon the eye, where pressure is not inadmissible. Having noticed the difficulties of eye operations, from the mobility of the ball, and the pain caused the patient by imperfect attempts at fixing it, I several years ago had an instrument constructed similar to the one referred to, but with one curve less in it, which answered the principal object effectually, but left the assistant's hand somewhat in the way—though much less so than the fingers directly on the lid. With the assistance of Mr. Max Wocher, I had the present instrument constructed about two years ago—since which time a large number have been manufactured by him and furnished to practitioners from all parts of the country. It perfectly controls the eye, in spite of any

The REMOVAL of FOREIGN SUBSTANCES from beneath the lids, or within the coats of the ball, is not always the easiest of operations. The lid can be held back by the elevator (Fig. 124) or the complete speculum (Fig. 123), or everted over a pencil or other convenient article, when the offending substance should if possible be *wiped* away by a camel's hair pencil or moistened sponge. When small sharp bodies *stick in* the eye, *pressing* them out with the edge of the cataract needle, will often be found more convenient than pulling with forceps. There is danger of increasing the irritation by unskillful attempts at removal. Small smooth substances will soon work down to the canthus or edge of the lids of themselves, by the natural movements of the parts. It has often proved safer when grains of powder or specks of metal have stuck deep in, to leave them there, taking care to keep down inflammation. A capsule has formed round them and they have continued for life without much injury. Any dissecting out is very dangerous, though some substances will require it—as pieces of percussion caps, which would cause more danger from poisonous corrosion than *need* attend the operation.

FISTULA LACRYMALIS,

As resulting from affections of the eye itself or the sac or ductus ad nasum with the minor operations on the parts, was before given (page 285). There may, however, be another form of

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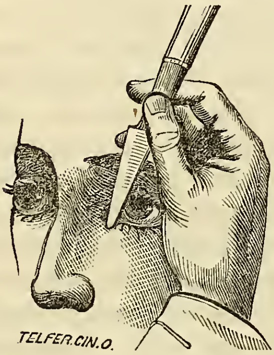
efforts, voluntary or involuntary, on the part of the patient; and having a long curved handle, can be not only held firmly, but regulated by the assistant with his hand back at the patient's ear; he can at the same time steady the head. The material is of German silver, in order to be more elastic. The two half circles (seen apart in Fig. 123) are approximated by compressing the handles, so as to inclose the eyeball under the lids, while the forward curves at their ends keep these from falling over it.

lacrymal fistula or obstruction in the duct of the LACRYMAL GLAND itself, producing dryness instead of suffusion of the eye. This part, however, is rarely the object of surgical or medical attention. When it is, it has to be treated on general principles, with due regard to the susceptibility of contiguous parts. In proceeding to the more common

Operation for Fistula Lacrymalis, place the patient in a sitting posture, and stand behind him. Have a small sharp-pointed scalpel, bistoury, or cataract knife; and holding it perpendicularly to the eyebrows, direct the point to the inferior margin of the internal tendon of the eyelids (*tendo oculi*), which can be clearly seen by drawing both lids outward. In this place and direction, press the point of your instrument directly downward [as in Fig. 126], until a flow of mucous and tears indicate that it has entered the lacrymal sac. As you then raise it out, make a slight outward cut so as to enlarge the opening. A *probe* slightly curving forward and inward, is then to be introduced and *pushed* through when it meets with obstruction. A few drops of blood from the nostril will show when it has entered that cavity; sometimes there will be quite a stream. Another sign is that, on withdrawing the probe, the patient can blow *wind* out at the eye. The Tube (see Fig. 121, page 728), or Style (Fig. 122), according to preference, is then to be inserted; and the wound healed sooner or later, as the case or operator's judgment indicates. [See for the Disease and *Medical* Treatment, page 285].

Fig. 126.



Operations on the Lids and Conjunctiva.

Wounds dividing the EYELIDS may require sutures, the "interrupted," using very small needles.

Extraction of the CILIA may be necessary for *trichiasis*, inversion of the lids, or *districhiasis*, the malposition of the hairs themselves. In the latter case, a touch or two of Caustic will often prevent the necessity for repeating the operation.

Entropion or Inversion may be otherwise injurious than from the irritation of the ball by the lashes just referred to, and require for its correction a shortening of the outer fold of the lid, or a lengthening of the inner, and perhaps even a removal of the tarsus. The first object can often be effected by cauterizing the lid on the outside, the second by simply incising the mucous membrane.

Ectropion or Eversion *may* require the *same* treatment as the last case, the complete removal of a part of the lid, or just the *reverse*, a shortening of the mucous fold and a lengthening of the cutaneous. The tarsus may have to be divided or removed as in the former case.

Ptosis, the elongation or drooping of the lids, may be connected with or induce the former cases, particularly entropion, and be remedied by similar surgery. The opposite fault, or too short eyelids LAGOPHTHALMOS, has often to be treated like ectropion. Either may be the result of muscular contraction or palsy, and remediable by corresponding means. New eyelids or part of lids have been successfully formed, from the integument of the temples; and a similar operation called "rhinorrhaphe" performed for epicanthus, the skin being brought from the back of the nose. In the case of new lids, even cilia have been *planted* by Diffenbach and others—rooted and grown into a good hedge or eyelash. This singular part of the operation is called "Blepharidoplastice."

When the eyelids grow together, constituting a simple case of Anchyloblepharon, they may be much more easily separated than kept separate. The plan I have successfully adopted is to keep the parts constantly lubricated with Olive Oil, with the other usual precautions for preventing any long closure of the lids for a day or two. Symblepharon, or adhesion of the lids to the ball, can not be so easily remedied. The tendency to re-union is obviated with difficulty; and the result of the operation is very likely to be unsuccessful, as far as the sight is concerned, from opacity of the thickened membrane. Where a false membrane is the cause of union, the case is more hopeful.

Sties and tumors on the lids have been before mentioned. When cautery fails they may be removed by simple excision. The same may be observed of simple superfluous folds of the conjunctiva (see pages 320 and 322.)

Ptergium and Encanthus have been also taken up in the first part (page 319). For their removal, raise them with forceps, cut *between* the diseased growth and the membrane beneath with a fine scalpel, and finish the operation with *curved* scissors—or the scissors and forceps alone may be used for the whole operation.

Operations Within the Globe.

Complete EXTIRPATION OF THE EYE may be required for very bad wounds or malignant disease [see pages 80 and 251]. When the knife is used, it is usual to first pass a hook into the ball and steady it. The lids being then raised, the ball is separated close to the bone, and the lachrymal gland also removed The muscles and optic nerve are severed together by a curved knife. If the patient does not intend to wear an artificial eye we are directed to divide the levator palpebræ, by a transverse incision through the upper lid; and remove a slip of the lid itself, that it may not be too long. I should prefer cutting the muscle off near the lid from within.

PARACENTESIS OCULI, or tapping the eye, often so unnecessarily resorted to (see pages 317 and 318) is performed by simple puncture of the cornea or the sclerotica. Sometimes both the vitreous and aqueous humors are evacuated, and even a section of the ball removed with the cataract knife, as in the operation *recommended* for Staphyloma! In these cases the lens and vitreous humor are intentionally removed, leaving room for an artificial or partial glass-eye. In what is called "schlerotic or choroid staphyloma," when there is effusion between the retina and choroid, a cataract-needle is sometimes passed through toward the center of the vitreous humor. "Staphyloma of the Iris" is connected with that of the cornea and with Prolapsus Iridis (see page 306).

The formation of an ARTIFICIAL PUPIL (schlerektomy, keratoplastics) is a bold operation, which has been attempted by modern oculists, though hitherto with, for the most part, but questionable or transient success. It is resorted to after staphyloma, onyx, leucoma and other causes of opacity; and for myosis or atresia iridis. In some cases a simple incision is indicated, in others the separation of the iris from its attachments; and in others again the excision of a part. Nothing but *complete* blindness of *both* eyes justifies a resort to the experiment.

By far the most interesting and important operations on the eyeball, are those for the restoration of sight in the deeper seated affection called

CATARACT.

This disease of the eye, after it is well established, is only curable by an operation. The blindness (which is rarely complete) results solely from opacity, either in the crystalline lens itself or its capsule, or in both.

LENTICULAR CATARACT is divided into the hard and the soft, according to the state of consistency assumed by the morbid change in the part. The HARD cataract is indicated by a radiated appearance of an amber color in the center, and gray toward the circumference. A *continuous* gray bluish or pure white color, implies a SOFT creamy state of the lens. "The darker the color, the harder the cataract; the grayer its appearance, the softer its consistence."—*Liston.*

In simple CAPSULAR CATARACT, when the opacity is in the *anterior* portion of the capsule, there is usually a pearly white *spot* in the center of the pupil, with a darkening bluish circle around it. The *posterior* capsular opacity is easily distinguished, being at some distance behind the Iris, and appearing concave, yellowish and striated.

By far the most common cases are those in which both the substance of the lens and its covering are involved, presenting the mingled appearance of both varieties—the anterior surface not having entirely lost its transparency so as to prevent the interior being seen—when it is, in fact, impossible to know whether the case is "complete *capsulo-lenticular*," or only "anteterio-capsular."

Incipient cataract may be mistaken for glaucoma or amaurosis, but in these the opacity is beyond and behind the pupil, having generally a concave appearance, and the form and sensibility of the iris, as well as the retina, are affected, which is not the case in cataract. On *catoptric* examination, instead of seeing three images of a lighted candle, as in amaurosis and generally also in glaucoma, the second upright and the deep inverted images are both absent or very faint, particularly the last.

Three *kinds* of OPERATION have been adopted—Extraction, Absorption and DEPRESSION, or proper—

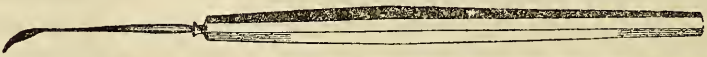
"Couching."

The *patient* should be in every respect as healthy as possible at the time of being operated on. For some weeks previous, at least, he should live temperately, but *not* "starvingly," avoiding all stimulants and stimulating condiments. The *pupil* should be well dilated for one or two days before, by applying to the lids the Extract of Belladonna and to the eyeball a solution of the Extract of Stramonium (15 gr. to the oz. of water.) These should be repeated every three or four hours or oftener, if necessary. When this important preparation is accomplished,

The patient is seated in a low chair in a well-lighted room, but not in the sunshine, nor with the eye in such a position with respect to the window, that the operator will be liable to see images on the cornea. The assistant should stand behind the patient so as to steady his head, and at the same time hold the Speculum Oculi (see Figs. 116 and 123, and note, page 730), which not only separates the lids, but securely fixes the ball itself. Usually, the upper lid is held by the fingers of the assistant or a mere hook-speculum or elevator, and the under lid by those of the surgeon, he having also to prevent the eye from rolling, while his other hand and mind are engaged in the delicate operation. The surgeon had better seat himself on a high chair before the patient, with a foot-stool high enough for him to steady his elbow on his knee while operating. Some, for greater steadiness of the head, prefer the patient to be recumbent; and unless the operator happen to be left-handed, or be ambi-dexter enough for the occasion (as it is desirable that all surgeons should be), he may have to stand behind when a *right* eye is concerned.

The *couching-needle* (the curved one, Scarpa's needle, Fig. 127, is now generally preferred to Hay's, Fig. 128) is to be introduced through the sclerotic coat, about two lines from the outer edge of the cornea, and a little below the horizontal axis of the

Fig. 127.



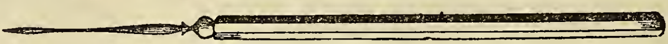


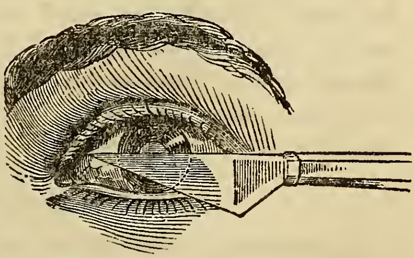
Fig. 128.

eye, for the purpose of avoiding the long ciliary artery. Carry the point on in a slightly backward direction (which the curved needle will take of itself, if that be used with the point looking backward) so as not to touch the Iris. When, on looking through the pupil, you can see the point of the needle in front of the lens, proceed to *detach* the *capsule* from the lens—(the needle has two sharp edges for the purpose. Then push it down out of sight, leaving the lens clear—if it was only anterior capsular cataract, in which case your operation is comcomplete. But if the *lens itself* or the posterior capsule still appear opaque, move an edge of the needle round its margin so as to separate the lens from the Tunica Hyoloidea; and then placing its flat surface on the top of the lens, push it down below the pupil and a little backward, so that it may enter the vitreous humor. If it does not move readily, the needle may be thrust into it to *pull* it down. Whether pushed or drawn down, hold it there for a few moments, and then gently raise the needle a little. If the lens follow, press it down, and hold it down again for a longer time. Repeat this process till it no longer returns. Then, and not until then, withdraw your needle, the operation being accomplished. The eye is to be closed and kept constantly wet with cold water—the patient being also kept in a dark room, and perfectly quiet until all danger of inflammation has subsided. These precautions are required for from two to six weeks, sometimes even for a longer period.

The Operation for Extraction

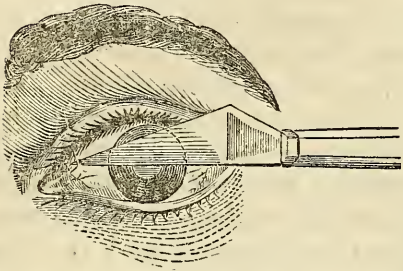
Requires a section of either the upper or lower half of the cornea. The *cornea-knife* used for this purpose has a triangular blade to make one straightforward motion suffice, instead of both a "cut and thrust," and to fill up the section as it goes, thus preventing the escape of the aqueous humor. For this operation the speculum, so convenient in almost all other eye-operations, can not be used, as it would compress the globe too much and force out

Fig. 129.



the aqueous humor. Here, therefore, the upper lid must be supported by the Retractor (Fig. 124), and the lower by the fingers of the surgeon (as shown in Fig. 125)—or the fingers of an assistant may be applied to the upper. The operator is advised to touch the cornea once or twice with the flat part of the blade, in order to take off the patient's alarm; and to use his left hand if about to operate on a right eye (unless he prefer, as I do, to stand behind his patient). He should rest his little finger on the patient's cheek, as if he were writing, and the knife a pen. The point enters the transparent cornea, with the edge downward (see Fig. 129), a little within the outer margin and above its center, and passes straight across, parallel to the iris, emerging at the opposite margin, the wedge-shaped edge advancing in two directions round the cornea, until a complete semi-circular section is made. Some operators prefer to cut upward (as in Fig. 130), though there is an obvious advantage in having the flap kept naturally in its proper place. The instant the knife is removed the lids are closed, the operator giving a signal to the assistant. After a brief interval the eye is again opened, the corneal flap raised (or lowered, as the case may be), the pointed end of the curette or of a needle inserted, and the capsule freely lacerated with it. Very slight pressure may then be applied to the eyeball, if the lens do not spontaneously pass through the corneal opening. The cornea is then adjusted; but, before being fixed with compress and bandage, it should be opened once more to see that everything is right, and particularly that there is no prolapsus of the iris. Should this accident have occurred, the protrusion may have to be pressed back, or the eye exposed to a strong light, to cause the pupil to contract and draw it back. (See page 306.)

Fig. 130.



The Operation for Absorption,

Or solution, is the earliest method of getting rid of the lens, or opaque coverings, but liable to the objection of having to be repeated, and requiring several weeks for the completion of the cure. it excites little inflammation, and is well adapted for the congenital and other soft cataracts of young persons, but not old, hard cases.

In the *posterior* operation (which is generally preferred) the couching needle is introduced in the same manner and place as for depression. The capsule is freely broken up by it, and the lens cut with it in two or three directions but not generally dislocated in the first operation. If this is not found sufficient, the lens is broken up into smaller fragments on repeating the operation, which gradually dissolve in the aqueous humor.

In the *anterior* operation, the needle is entered through the cornea about a line anterior to its junction with the sclerotica, and passed forward through the pupil, breaking up the capsule, if not the lens also. This may do for the first operation, but is liable to cause iritis, even when the pupil is well dilated, as it should be, before the operation.

Congenital Cataract

Should be early operated on—when the patients are not more than two or three months old. If neglected for a much longer period, the proper nervous and muscular power of the organ *may* never be gained; and in process of time, though the lens is absorbed, the capsule is thickened to a very unmanageable degree, and will absolutely require extraction or excision. At an early age the method of absorption is sufficient, and easily performed.

LECTURE LIX.

OTHER OPERATIONS ABOUT THE HEAD AND FACE.

TREPHINING.

THE necessary instruments for this operation are a large and small trephine (or cylindrical saw), a Hey's saw, an elevator and a scalpel. The other instruments which may be required, such as needles, forceps, etc., are found in a common Pocket Case, which every surgeon should carry with him at all times.

The operation is performed for fracture of the skull, with depression, causing COMPRESSION of the BRAIN; also for compression from extravasation or suppuration, or tumors of the dura mater; and sometimes even for *irritation*, as when disease of the skull causes epilepsy. [For the use and abuse of the operation, see page 103, and cases, page 104.]

In cases of extravasation, or suppuration, the trephine used should be *large*, so as to allow the fluid to escape freely. On the other occasions a *small* one may suffice.

The first thing to be done is to *remove* a sufficient portion of the *scalp*, if that has not been done by the accident. Cut a flap in the shape of a letter D, raising the circular side. If there be any loose pieces of bone, remove them with forceps, completing their separation, where necessary, with Hey's saw. The *pericranium* is next to be separated from the surface of the bone, to which the instrument is to be applied; or a circular incision for the edge of the instrument will answer the purpose of preventing laceration by the teeth. [To insure this incision being made accurately, I have never seen anything so good as Gibson's trephine, with a removable lancet attached.]

Apply the trephine so that the center-pin will rest on a sound portion of the skull. Then press gently and saw through, steadily turning the instrument backward and forward, but stopping and removing it frequently, to cleanse the teeth with a brush, and to examine the groove—which must be at the same time well cleansed from the sawdust and blood, by means of a wetted sponge. As soon as the groove is deep enough to steady the instrument, withdraw the center-pin. When you get nearly through the bone, be very cautious, and examine your progress very frequently, lest you cut through the dura mater. As soon as any point of the circle is through the bone, introduce the small end of the elevator, and endeavor gently to raise the whole. When nearly cut through all round, it will break off smoothly and come away with ease. If it should still be very firm, introduce the trephine again and saw a little more, taking care not to let the teeth touch at the point or segment which is already cut through. Continue thus, cautiously, until the elevator can be used without too much violence.

The trephine should not be applied over the course of the middle meningeal *arteries*, nor over a *suture*, if both can be avoided; nor low down on the front portion of the head, unless absolutely necessary. After having removed the extravasated blood or pus, or elevated any depressed portion of the skull—by "prying" with the elevator as a lever against the opposite firm edge, as a fulcrum—replace the scalp and secure it by a compress of lint or cotton. The part must be kept wet with cold water or some other cooling lotion before recommended.

HERNIA AND DROPSY OF THE BRAIN, ETC.

Trephining has been resorted to for the removal of circumscribed FUNGUS of the DURA MATER. When a sufficient portion of the cranium is removed, and there still appears nothing to contra-indicate such a proceeding, the fungus is cut out *from* or *with* the portion of the membrane from which it grows, or the ligature is used instead of the knife, though that measure as well as the cautery is *here*, perhaps, really more dangerous than the more favorite surgical means.

"Hernia Cerebri" or PROTRUSION of the BRAIN, has been treated with a variety of experimental "operations." When the sac of investing membranes becomes strangulated, there is sloughing followed by fungous granulation, which is sooner or later fatal. The "hernia" so called, composed only of coagulated blood, is more speedily fatal. The best treatment is the *preventive*—a natural degree of pressure or protection where any part of the cranium is wanting. Shaving or slicing off the tumor level with the skull has in some cases appeared necessary before the artificial cranium could be borne, and in *some* of these has succeeded. A careful operation to remove the stran gulation, enlarging the bony opening if necessary, has enabled some surgeons to replace the brain before it had inflamed or degenerated. When the tumor contains serous accumulations, the greater success has followed simple *puncture*, as in the operation of

PARACENTESIS HYDROCEPHALI. This is one of the questionable operations, which, though resorted to from the earliest records of surgery, has been followed with so little success that it is not generally recommended—even as a last resort. Could it indeed be justified before the brain were seriously injured by the accumulation, there is reason to believe that better results would follow. Other operations and wounds on the parts show that the opening of the brain is not necessarily fatal. The congenital and very advanced cases in which it has generally been tried, were otherwise quite hopeless ones. The same instruments and modes of proceeding are adopted as for serous accumulations in other parts. The place chosen is generally one of the still open fontanelles, avoiding sinuses. One surgeon, who has reported the unexampled result of nineteen operations with but one death, directs the trochar to be plunged in two inches, if necessary, into the ventricles. The water must not be allowed to run out too rapidly—stopped altogether as soon as any sign of fainting occurs. The cranium must be compressed during and after the flow, to prevent a rush of blood, on the withdrawal of the accustomed pressure on the vessels. The operation has had to be repeated even in successful cases. The wound itself easily heals.

The FRONTAL SINUSES have had to be opened for the removal of polypi and other products of diseased action. A sawing instrument or very small trephine is recommended for the purpose, in preference to a trochar, or anything that would split the bone. The trochar can be used for opening a second chamber when one is entered. To prevent the fistula which must follow the operation when the connection with the nose is closed up, it has been made a question whether one should endeavor to reopen the original orifice, bore out a new one, or destroy the mucous membrane throughout the sinus by cautery.

The ANTRUM HIGHMORANIUM is sometimes required to be opened for polypi and the presence of foreign substances (as insects), as well as for disease of the part. (See under "Maxillary Abscess," page 280.) The operation is, in rare cases, required to be performed through other parts than the alveoli, the mouth or nose, and even through the cheek (just under the prominence of the cheek bones, eminentia malaris. In one case I was obliged to take out half of the palatine process of the upper maxillary with a saw made for the purpose.

EXTIRPATION of the upper JAW, or large parts of it, is a formidable operation, far too frequently resorted to for osteo-sarcoma and other much less serious diseases. (See, for a case *prevented,* pages 251 and 267.) The origin of the evil in many of these cases is "bad teeth," or bad-medication, particularly Mercury. Another result of this much "*abused*" article, is permanent

ANCHYLOSIS OF THE JAW. This state, when it results from mere superficial ulceration, has been remedied by dividing the contracted masseter, the knife being used in the mouth.

OPERATIONS CONNECTED WITH THE EAR.

FOREIGN SUBSTANCES in the EAR are more safely removed, when practicable, by syringing, than the use of forceps. Insects should be well deluged with Olive Oil.

PERFORATION of the external MEATUS, for adhesions or false membranes, may sometimes cause a deafness, supposing no other cause for it. When the operation required is only superficial, it is simple and easy; when deep, very difficult and questionable. In the former case, scissors may be sufficient; in the latter, use a bistoury, sheathed except at the part required to cut. After penetrating half an inch, the operator should cease, at least for a time. When the atresia extends to the tympanum, the case may possibly justify its perforation also.

The TYMPANUM is perforated when (there being no other cause for deafness) that membrane is itself in an indurated or ossified condition, when the space beyond is blocked up with mucous or otherwise irremovable matter, or when the Eustachian tube is itself irredeemably impervious. The wound is not dangerous; indeed it will soon close up, unless prevented by a tube or injections. But temporary advantage has generally been the result of the measure. A substitute for the Eustachian tube has been contrived, without cutting the tympanum, by a perforation into the internal ear through the mastoid process, with the insertion of a tube, until the orifice becomes naturally permanent.

BORING THE EAR for ear-rings is a *surgical* operation that, simple as it is, has been followed by bad consequences. If to be done at all, a needle should be pushed through centrally, avoiding the cartilage, upon a cork—the part having been previously compressed, to lessen its sensibility—and a temporary ring immediately inserted, which, after two or three days, must be moved, to avoid adhesion and insure *cutification.*

Otoplastice.—One of Taliacozzi's operations or directions is for the formation of an entire ear out of the scalp behind. The lower part of the ear has been successfully restored in this way. The Hindoos are said to successfully transplant fresh-cropped ears from other heads!

CATHETERISM of the EUSTACHIAN TUBE.—This necessary appendage to the organ of hearing, sometimes requires the *insertion of a catheter*, to clear or enlarge it for the passage of air. Its orifice is to be found about a quarter of an inch behind the soft palate, large enough for the insertion of the little finger. The instrument is first passed through the nostril of the affected side, with its convexity upward and its point on the floor of the nose, until the patient *gags* from its reaching the posterior nares and rounded edge of the soft palate. Then by turning the point further toward the affected side, it will generally slip into the tube, or can be directed in by the finger through the mouth.

OTHER OPERATIONS ON AND ABOUT THE NOSE.

[For those connected with the Eye, see pages 318 and 731; with the antrum, page 280; with polypus, page 216.]

FOREIGN SUBSTANCES in the NOSTRILS, which children are apt to introduce, will sometimes get beyond their reach, aod cause some danger and great alarm. A scoop or the polypus forceps will generally enable any one who knows the shape of the cavities, to get them out. A flexible catheter pushed up into the posterior nares by the finger and out at the nose, may often effect the object.

The NOSTRILS are sometimes more or less completely CLOSED, so as to obstruct respiration and injure the speech. When the obstruction is not situated too high, and independent of any malformation of the bones, it may be remedied by obvious means of dilatation or abscision.

A defect, of an opposite character, where the SEPTUM between the nostrils is wanting, causing "*flat-nose*," is *easily* remedied by means of a strip from the upper lip—at least this is one of the easiest of the *plastic* operations, and a part of the regular operation of

"RHINOPLASTICS" PROPER (or *of the Nose*—see page 583, where the general subject is spoken of—the *word* meaning, according to etymology, either plastic operations on the integument generally, or, as it has been of late more commonly used, *nose-moulding*, the type of such operations). As this is a really practical and useful piece of work, I will give fuller directions than for some of the *other* "rhinoplastic" operations. The occasions for it used to be much more frequent, when syphilis and Mercury were more destructive in their ravages. It was formerly not an uncommon thing in old countries to see men with a flat silver coin stuck in the middle of their face, instead of a nose. The Italian method of taking the material for the new nose from the arm, that being bound up across the patient's face for the purpose, has been almost universally abandoned. Dieffenbach cuts integument from the temples. After these and many other experiments, the ancient plan of cutting from the forehead, is found to be the best.

You have first to cut out a *pattern* of the superficies of the desired organ, extended into a plane figure—a triangle with rounded corners at the base—nearly like the "hearts" on common playing cards, if you do not intend to form a septum at the same time; or more like the "clubs" of the same, if you do. It is better to cut your pattern on a wax-mould of appropriate dimensions. This being laid on the forehead, with its base uppermost, and apex at that of the *late* or future nose, you draw in ink the outlines of your flap. After this preparation, pare off raw and scarify the remaining edges of the old nose. Then cut deep round the marked flap, except just across the apex. Dissect this flap down to the periosteum, holding it with your finger and thumb, and then turn it *round* and *down* into place, moulding it into the proper shape. The connection at the top must not be too narrow or short, but include the fibers of the corrugator muscles; and the bleeding from both surfaces must have ceased before the parts intended to unite are brought together. A few interrupted sutures will be better than adhesive straps or plasters of any kind. A little lint in the nostrils, moistened with Sweet Oil, will be necessary to keep them open and of proper size.

The greatest difficulty in this proceeding having been found with the COLUMNA, Mr. Liston introduced the improvement of adding this part from the upper lip, a few weeks after the rest of the operation. He takes a complete strip out of the middle of the lip, for its whole width and thickness. The *skin* and place for attachment being pared, and the frænum severed, the flap (about a quarter of an inch broad) is turned *up* but not *round* or twisted. That additional obstacle to continued circulation is here unnecessary, the mucous membrane becoming cutis and cuticle after sufficient exposure to the air. The twisted suture is here used, both to secure the new septum, and to reunite the shortened lip (just as in the common operation for hare-lip). This operation is sometimes required alone, as above alluded to, in cases of lost or low septum, when, as Mr. Liston observes, the appearance of the tumefied lip, as well as of the nose, is improved by the proceeding. "The cicatrix being in the situation of the natural fossa, is scarcely observable." When the ALÆ alone are wanting, it is recommended to bring them from the forehead, rather than disfigure the face, the long, narrow *sanguiduct* then necessary, is supported for a time by being imbedded in a groove along the surface of the nose.

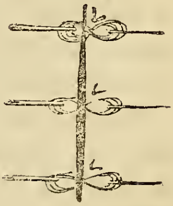
Granulations will go on rapidly under simple treatment. The temperature of the transplanted part has to be watched and regulated, generally by covering it with flannel, and the application of warm or tepid water. When it has fairly rooted or become connected by anastomosis with the vascular system of its new location, the connection at the top may be cut and that point also moulded into seemly proportions.

HARE-LIP—LABIUM LEPORINUM.

This striking deformity consists in a fissure or fissures of the upper lip. When there are two, they usually extend downward and outward from each nostril. When there is only one, it seldom runs exactly in the middle. The division sometimes extends back through the palate bone, as well as the soft palate. When the teeth project through the severed lip, they add very greatly to the deformity. It is a congenital malformation or deficiency, and only to be remedied by

The operation. This may be easily performed in a child at any age, though I prefer to have it two or three years old. If the patient be an adult, let him sit in a low chair and his head be steadied by an assistant. The surgeon, raising the edges of the fissure with his fingers or forceps, places a flat piece of wood between the lip and the gum. In rare cases the lip will be found adherent to the gum, when it will require to be dissected loose. Sponging with cold water will be sufficient to staunch the bleeding. The edges of the fissure are to be pared off from both sides upon the wood with a scalpel or bistoury, so as to leave the sides straight, in the shape of a letter V. When all bleeding has ceased, bring the fresh surfaces together. Be sure that you have the margins even at the lip, and then pass a thin sewing needle through and across the direction of the fissure, near its lower extremity. Make it penetrate deep enough to be quite near the inner surface of the lip, where it crosses the fissure. This will keep the inner edges near together, while the outer and all between must be secured by a ligature (or the "twisted suture," described page 567) over the head and point of the needle in the form of a figure 8. A common waxed thread will be a suitable material, and should be drawn tight enough to bring the wounded edges together, but not so tight as to strangulate the parts and cause sloughing. After the margin is thus secured, introduce two other needles, deep enough to nearly reach the mucous lining of the lip, and apply ligatures as before (see Fig. 131). It is proper to break off the points of the needles with forceps, as they will be in the way. The parts should then be covered with lint, and a bandage applied to retain it, both being kept constantly wet with cold water. After six days (or four in the case of a child) you can remove the needles and substitute adhesive straps or the Collodion. Before attempting to pull them out, take hold of them with the forceps and turn them three or four times round. If anything adheres to the margin of the hole, carefully scrape it off, and see that the surfaces of the needles are smooth. To prevent any rusting, they may be galvanized previous to use; but if a little Sweet Oil is applied to them before entering, and every time before the lint or bandage is re-wet, there will be no danger of corrosion.

Fig 131.



The patient should be confined to a room for several days, and no one allowed to visit him who will be likely to excite him to laugh or cry, and even much talking should be avoided. It is well for security's sake, to pass a long strip of adhesive plaster over the lip, reaching from ear to ear, first pressing the cheeks forward. Such a strap will prevent any tension upon the lip, until it is firmly united and smoothly healed.

Various *modes* of bringing and keeping the divided lip together are recommended by authors, but the foregoing is the plan I have always pursued, and I have been successful in every case, It is simple and convenient, and secures the lip for the time, as well as any other, and much better than most others. The "silver pin" alone, from not bringing the parts together with sufficient force, is very liable to fail. A majority of the cases I have had, had been before operated on in this manner *unsuccessfully.*

If you have a case of the *double* hare-lip, operate on both fissures at the same time, and secure them by the same ligatures and bandage, the intervening portion of the lip being transfixed by the needles. If the *teeth* project so as to be in the way, and can not be pressed back, let them be extracted. Sometimes the *jaw* itself projects too much, in which case *that also* may be trimmed off with the bone forceps, after you have first separated the gum from it.

Other Operations About or Within the Mouth.

"Cheilo" and "genio-plastice" are Taliacotian operations for the restoration of lost parts of the lips and chin, respectively, the material being procured from any *approximable* part of the neck. *Stomato-plastics* are also sometimes resorted to, in connection with *incisions* for opening or widening of the mouth in congenital—or other partial cases of

Atresia oris. Skin already formed has to be brought, we are told, from the cheek, and grafted on to the newly-made or enlarged lip, in consequence of the difficulty of preventing reunion, particularly at the corners. The necessity for any such patch-work may be well doubted: and fortunately, the necessity for any operation at all is very rare—the *mouth* is a part least frequently defective in the new-born, or inefficient in the older.

Tongue Tie.—A child is said to be "tongue-tied," when there is a preternatural extension of the *frænum linguæ*, to the tip of the tongue, fixing it firmly to the floor of the mouth. When this malformation is so complete as to prevent the child from sucking, the superabundant frænum should be cut, so as to free the tongue from its attachment. This may be done with blunt scissors, cutting loose about one-eighth of an inch of the *anterior* portion of the membrane. The points of the scissors should be directed *downward* as near the floor of the mouth as possible, so as to be sure to avoid cutting the lingual artery, which is situated on the inferior surface of the tongue. I prefer to operate when the child is asleep. Hold the tongue up a little with the fore-finger of one hand and operate under it with the other. But a few drops of blood will flow.

In LANCING the GUMS of teething children, the lancet should be so held and directed as not to injure the sacs of the advancing teeth.

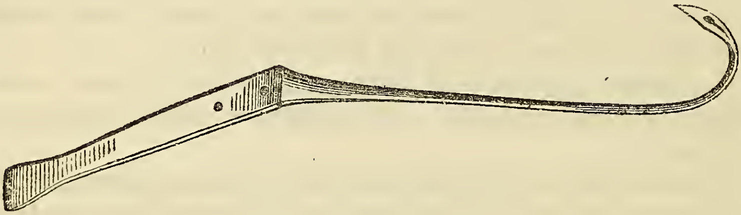
AMPUTATION or EXTIRPATION of the TONGUE, or a part of it, is sometimes resorted to, not only in malignant diseases (page 253), but for tumors or hypertrophy, aneurism, etc. The knife and the ligature have had each their advocates in this case. The latter is certainly less immediately dangerous, preventing the necessity for tying the lingual artery, and the risk of other hæmorrhage.

For TUMORS of the GUMS, and "gum-boils," for which *knife operations* are too frequently relied on, see under Epulis and Ranula (pages 330 and 332), and in connection with Disease and Extraction of Teeth (pages 323 and 326). For the operation of introducing the style in salivary obstructions, see also pages 283 and 728).

The CLEFT or rather DEFICIENT PALATE—mentioned under Hairlip, as connected with that deformity, and a similar bony deficiency resulting from ulceration—has been successfully remedied in some instances by a sort of internal "rhino plastic" operation, notwithstanding the natural indisposition of mucous surfaces to take on adhesive inflammation and the great difficulty in this case of keeping the parts in quiet apposition. In this operation the new roof is brought from the *walls* of the mouth, or inside of the cheeks, and secured by a sufficient number of interrupted sutures. The difficult operation (called "Staphylorrhaphe," and by one learned author "Uraniskoraphia!") is only necessary where the palate bones or palatine processes of the superior maxillary, or so great a portion of the soft palate is wanting, as to make it impossible to approximate the edges by simple ligatures—as is done in the more ordinary.

Operation for fissure of the palate. Some of the same difficulties, however, attend this operation, as the more serious just described. Various plans have been devised for overcoming these, and numerous instruments invented—some of them so complex as to require several assistants, and make the operation very tedious, thus adding to its uncertainty. Here as always the simplest means are the best; and I prefer the *curved needle* (Figure 132) eyed at the point, with a pair of *forceps*, which like it, has a handle set at an obtuse angle with the blade, so that when either is being used, the hand of the operator may be out of his own light. The patient's head is to be held steadily back by an assistant, and the mouth kept open by wedges far back between the teeth. The edges of the fissure are to be first pared off by curved scissors or bistoury, while firmly held by the forceps. As soon as the bleeding has ceased and all coagula been removed from the wounded surfaces press the tongue down with a finger and introduce the needle, armed with the ligature, about half an inch from the margin, bringing it out at the fissure. Then seize the ligature with forceps, and withdraw the needle. Thread it again with the same end, and pass it into the fissure, through the opposite margin and out about half an inch on the opposite side, seizing the ligature as before. This operation may be repeated for as many ligatures as the case may require.

Fig. 132.



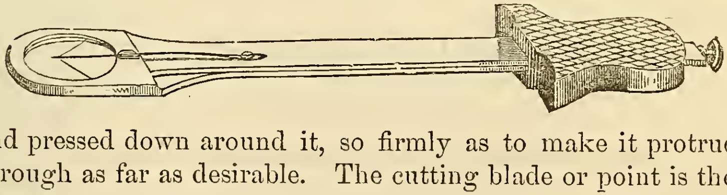
Tie them by the aid of the forceps, just tight enough to bring the edges together. There are several other modes of fastening the ligatures in use; and probably the simplest and best of any is to pass both ends of the thread, after insertion, through a piece of lead, and push this up by the forceps or a canula, till it brings the lips together with sufficient force, and then squeeze or weld it, as it were, together, by strong forceps. If there is much difficulty in approximating the edges of the wound, make on each side, parallel to the fissure, and beyond the ligatures, near the alveoli, a cut of about an inch in length, to take off the tension of the membrane. It is always indispensable for the success of this operation, that the patient be of sufficient age and have proper discretion and self control, to remain perfectly still, uttering no groan or word. Even for some days afterward he must not allow himself to make any violent effort of voice, deglutition or respiration—must avoid sneezing, coughing, and much if not all talking. His diet should be semifluid, such that a few small swallows at a time will suffice for both food and drink. Operate immediately after a meal, and let the interval between the future meals be as long as possible. In such a case as *this* even a little "starvation" is justifiable!

[In all these operations silver wire is now employed, instead of silk, and with very marked advantages, as suppuration does not occur around it.]

OPERATIONS ON THE TONSILS AND UVULVA.

EXCISION of enlarged TONSILS (see page 334) is performed by means of the instruments represented in Fig. 133. This consists of an angular or rounded blade which can be drawn back, leaving a ring which is to be passed over the part to be removed

FIG. 133.



and pressed down around it, so firmly as to make it protrude through as far as desirable. The cutting blade or point is then pushed suddenly forward, a *needle* which protrudes some sixth of an inch beyond the point, transfixing and holding the severed portion to prevent its falling into the throat. This fixing needle or fork is sometimes so arranged that it can be first pushed through the tonsil by a spring and raised, before the blade is advanced. This plan is effectual, so far as its direct object is concerned, but is attended with so much danger from hæmorrhage that I do not recommend it. The simpler method with the instrument described is sufficient and devoid of danger. It is well also with it not to cut deep enough to wound any considerable arteries. The little hæmorrhage that usually occurs may be readily stopped by cold water, salt, or the dry powder of Slippery Elm.

Excision or Abscision

Of the Elongated Uvulva can be conveniently performed by the same instrument. It is too simple an operation to need further explanation.

The Stomach Pump

Is a useful instrument, for the introduction of which it may be proper to say a word in this place. When the special instrument is not at hand, the elastic tube belonging to an injecting syringe will answer the purpose very well; and the syringe itself may be used as the pump—if a large one, one stroke of the piston may suffice. Wetting this tube or the regular one with water will be sufficient lubrication. In introducing it, insert the finger also and press into the pharynx and pass the end down the orifice of the œsophagus; and in withdrawing, recollect to stop the outer end, so that any liquid in it may not fall back into the stomach.

LECTURE LX.

OPERATIONS ON THE NECK, THORAX AND ABDOMEN.

Wry neck may be caused by spasmodic or permanent muscular contraction, bad cicatrization (page 535) or be connected with disease of the cervical or even lower vertebræ in general spinal curvature. In the first case, when other medical and mechanical means fail, the constricting muscular tendon or fascia is to be ascertained, and divided by "the sub-cutaneous section," no more external wound being made than necessary to admit the instrument. The *snapping* back of the muscle will tell when it has been completely severed; a compress should be immediately applied to prevent sub-cutaneous hæmorrhage.

In all operations about the neck, as in removing tumors, if they are not very superficial, special care is required, on account of the number and variety of nerves and vessels to be avoided (see page 570). Even the removal of a common parotid tumor may be followed by palsy of the face.

[For all I have to say about knife-operations in the THYROID GLAND, see under *Bronchocele*, page 338].

LIGATING ARTERIES OF THE NECK.

The same general principles apply to the tying of arteries when wounded, as for aneurism or other morbid cause (see page 579) except that the *wounded* artery should here have a ligature below as well as above the wounded part. When the vessel can not be reached through the dilated wound, it should generally be cut down to, in the manner now to be directed, First, for the

COMMON CAROTID, I will mention the particulars of an interesting CASE: In March, 1848, Mr. Jones, of Washington city came to Cincinnati to put himself under the care of Prof. R. S. Newton for osteo-sarcoma of the lower jaw, which had already involved the soft parts with a considerable part of the neck. He had previously consulted other eminent practitioners and professors, without benefit or encouragement. During treatment for the *medical cure*, the facial, the internal maxillary, and the sublingual arteries all sloughed away together. Fortunately, though the accident happened in the night, Dr. Newton was at hand, and *with* his HAND averted the immediate danger from hæmorrhage, and continued doing so until six o'clock in the morning. Meanwhile, as it was impossible for him to attend to this and operate at the same time, he sent for aid. As soon as it was light enough, with his assistance and that of Prof. Morrow, who was also called, I proceeded to take up the right common carotid. It was necessary on account of the extension of the disease, to operate about two inches above the clavicle (instead of the spot usually preferred, the middle of a line from the angle of the jaw to the top of the sternum, where the vessel is crossed obliquely by the omo-hyoid muscle);

and to be guided wholly by the anatomy of the parts, as from the very great exhaustion of the patient, hardly any pulsation in the artery was perceptible. Another peculiar difficulty we experienced, was from the patient's emphatically *hæmorrhagic* diathesis (see page 209). The amount of blood that flowed out from the smallest veins, at the very first incision, would have made an observer suppose we had divided the external jugular. It was the same with every subsequent cut, thus obliging us to stay proceedings until the venous hæmorrhage could be averted by styptics. (We afterward learned that the patient had been several times in danger of bleeding to death from slight cuts in shaving.) By proceeding very slowly and carefully however, we got down to the vessel sought for and applied the ligature. All serious hæmorrhage immediately ceased; and the patient did not appear to suffer any additional inconvenience from the loss of the artery.

In the usual place of operating (noticed above), make a superficial incision through the platisma myoides, when the neck is tense, obliquely along the course of the vessel, and along the inner margin of the sterno mastoid for about three inches, and terminating at about an inch above the sternum. The deep fascia and cellular substance are to be divided with the handle of the scalpel, or with your fingers, or if too firm for this, it may be carefully cut; and the vessel reached just below, or in some cases, above the omo-hyoideus. Pass the artery needle under the vessel from the inside, bringing it out between the artery and the pneumogastric nerve, the vein being outside of the nerve.

The EXTERNAL CAROTID may require ligating for wounds, when that of its branches will not suffice. It can be tied below the diagastricus and ninth pair of nerves, at the level of the hyoid bone; but it would be easier and safer to take up the common carotid.

The ARTERIA INNOMINATA or the RIGHT SUBCLAVIAN (internal to the scalenus muscle) is reached behind the sternal and clavicular origins of the sterno-cleido-mastoideus. A crucial incision is first made, along the inner edge, and across the origin of, this muscle. This, the sterno-hyoid and sterno-thyroid muscles being cut through, the fascia beneath is to be divided *by the finger*, and the ligature inserted from without inward, taking care to avoid the vena innominata and contiguous large nerves.

The SUBCLAVIAN is much more easily reached and safely tied on either side, *exteriorly to the scalenus.* The first incision, just above and parallel with the clavicle, extends from the sterno-mastoideus to the trapezius. The external jugular is to be carefully avoided. The first long incision had better be made *on* the clavicle, the skin being first drawn down, and all the deepening done without any more cutting. (See page 577.) The needle should be passed from below upward round the artery, which is found in the angle formed by the edge of the scalenus and the first rib.

The AXILLARY ARTERY may also be reached by incision above the clavicle extending in an inward curve from near its sternal extremity to the anterior margin of the deltoid muscle, and turning back a flap. It is better, when there is a choice, to cut up to it from the arm-pit, the first incision being three inches in length near the margin of the latissimus dorsi, between it and that of the pectoralis major.

LARYNGOTOMY AND TRACHEOTOMY.

The former of these is chiefly necessary for the removal of foreign substances. Make an incision through the integuments in the median line from the lower side of the Pomum Adami to the lower margin of the cricoid cartilage. Separate the skin a little with your fingers, and with the handle of your scalpel rupture the cellular membrane between the sterno-hyoid muscles, down to the crico-thyroid membrane. Then pass the point of your scalpel, with a sudden jerk, through the membrane. A quarter of an inch incision will be large enough for the passage of an instrument or the free ingress and egress of air; and this can be enlarged laterally, if necessary, for the extraction of any foreign substance. Take care that the point of the knife does not pass through and wound the opposite side of the cricoid cartilage. This operation has to be preferred to the following, in very young children, owing to the shortness of their necks.

TRACHEOTOMY is resorted to in croup and other occurrences preventing respiration through the larynx. The chin and sternum are well separated, and an incision is made in the median line, extending from near the upper end of the sternum to the cricoid cartilage. The cellular tissue at the lower end of the wound is dissected, the operator being very careful to hold aside any veins he may come to. Continuing the incision down to the trachea, the point of the knife is made to enter it at the lowest part exposed, and the edge carried upward to the desired extent. If the object is to make an entrance and exit for air, a tube is inserted for the purpose, and the rest of the wound closed up. The operation is an easy one, and perfectly safe if the directions are followed—easier on the living than the dead subject. In very fleshy or short-necked subjects, there may be difficulties. Keeping in the median line is essential to success. Opening the trachea is almost always to be preferred to the more superficial operation into the larynx.

ŒSOPHAGOTOMY

Has been resorted to as a means of conveying food into the stomach, when the pharynx is impervious. It is sometimes indispensable for the extraction of foreign substances lodged in the throat (see CHOKING, page 336). It being ascertained on which side the obstruction adheres or projects an incision is there made between the trachea and the sterno-cleido-mastoideus. To avoid the recurrent nerve and the thyroid as well as carotid arteries, the dissection should be made chiefly with the fingers, the fascia being cut with the protection of a director. The smallest practicable incision through the œsophagus is to be made—to be dilated if necessary. This operation is only a last resource, and in a large proportion of cases a final or fatal one.

PARACENTESIS THORACIS.

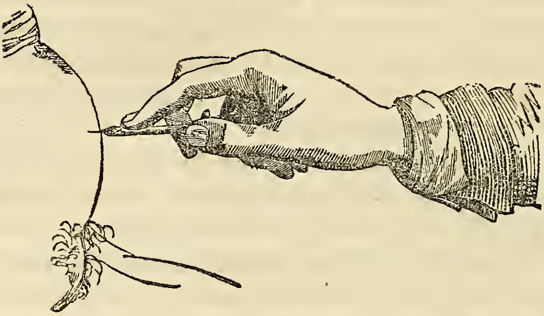
Puncturing of the pleura is a much more serious operation than that of the (diseased) peritoneum. It is, however, in some cases necessary; and some have even attempted to relieve hydrops pericardii by operation. The most frequent cause for which the operation is justifiably practiced is EMPYEMA, or the accumulation of pus within the pleura. In any doubtful case, a very small trochar or grooved needle is recommended, with a cup to cause the fluid to rise through the narrow tube. The same measure (without the cup?) is applicable in EMPHYSEMA and PNEUMOTHORAX (when there is air, instead of pus, in the cellular tissue and pleura respectively). In HYDROTHORAX and HÆMATHORAX a resort to the trochar and canula is more questionable. It is certainly contra-indicated where the patient is already too far sunk for the heart and lungs to hopefully resume their functions; where there is a high grade of inflammation or tuberculosis; or where a wound (a fracture of the ribs for instance) is the cause, which by dilatation may be made to supercede the operation, or reaches beyond the inner fold of the pleura and is too deep for it.

For the operation itself some prefer incision with the bistoury to puncturing with the trochar. Make an incision an inch and a half long through the integuments at the upper edge of the sixth rib, a little behind its middle, and carefully separate the inter-costal muscles, passing the point of the bistoury on through the pleura costalis. Then introduce the canula, through which the pus or other fluid may pass off. Great care must be taken that air do not pass in through the canula. To avoid this serious danger, an instrument has been recently invented (and manufactured in this city) having an air-tight valve, to prevent ingress, while it allows fluids to flow freely out. In the absence of such an instrument, it is well to place the patient upon the diseased side, immediately after the canula is introduced, and to take care to close this before all the morbid fluid is discharged.

Paracentisis Abdominis—Tapping.

Operation.—Place the patient in a chair in a sitting posture, pass a bandage made of a sheet, folded about half a yard wide, around the abdomen, let it cross behind his back, and put the ends in the hands of two assistants, who must be directed to draw so as to tighten it as as you desire, while the fluid escapes. It is well to have this bandage cover the whole abdomen, having a hole in it through which to operate. The surgeon should then make a cut a half or three-quarters of an inch in length (according to the size of the trochar) with a sharp lancet or bistoury, *through the integuments* along the linea alba, two or three inches below the umbilicus. Then introduce a diamond-pointed trochar, covered with a canula, and pass it on *into the cavity* (Fig. 134). Withdraw the trochar, leaving the canula in the orifice to conduct off the fluid. The trochar may be pushed in without the previous lancing; or the whole incision may be made with the lancet, and a blunt tube or canula introduced through the opening thus made. The fluid is received into a proper vessel, while the assistants are directed to draw

Fig. 134.



gradually upon the bandage so as to keep a firm pressure upon the abdomen as the fluid escapes, lest by too suddenly taking off the pressure upon the abdominal vessels, the blood settle down into them from the heart and cause fainting, or even burst the coats of the vessels and cause fatal internal hæmorrhage. The fluid being drawn off, the patient is put to bed in a horizontal position, the wound closed with an adhesive strap, and a bandage applied round the abdomen.

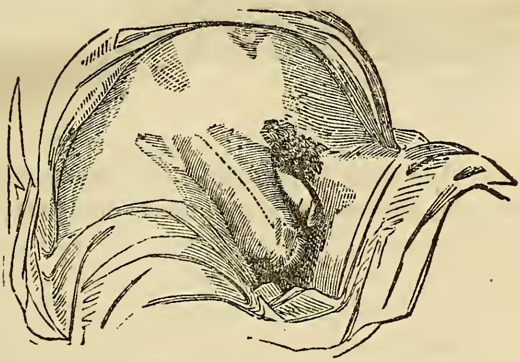
If faintness occur during the flow of the fluid in spite of your bandage, you must stop the flow, lay the patient down, and wait a few hours, or perhaps a day or two, before the remaining portion of the fluid is evacuated.

Operation for Strangulated Hernia.

Though it is presumed that no one will attempt to operate in this case who is not at least a tolerable anatomist, it may be well to enumerate in order, the textures that will be found over the sac, and that must be cut through before succeeding in the object you will have in view. The symptoms justifying or demanding a resort to this operation, were noticed when treating at length of the disease or accident. [See Lectures on Hernia, Part I, page 361.]

In the most common form of the Oblique Inguinal Hernia [Fig. 135] we find, immediately under the skin, a strong condensed *cellular tissue* derived from the superficial fasciæ of the abdomen, in which ramifies the external epigastic artery; next there is the *fascia spermatica;* then a *tendinous layer* derived from the semi-circular bands, which connect the margins of the external abdominal ring; lastly, the *cremaster muscle* lies in immediate contact with the sac. The *internal* epigastric *artery*, it should be borne in mind, always lies *internal* to the neck of the sac.

FIG. 135.



In COMPLETE INGUINAL OR SCROTAL HERNIA [Fig. 135], the *Spermatic Cord* lies behind [except the Cremaster muscle, which was mentioned as being found in front of the sac.]

DIRECT OR VENTRO-INGUINAL HERNIA has the same covering, except the Cremaster Muscle, there being no connection in this with the Spermatic Cord. In this case both the cord and the epigastric artery lie on the outside of the sac.

The OPERATION is thus performed: The patient being placed in the position described for the Reduction of Hernia [page 361], the parts being shaved and the skin held tense, the surgeon makes an incision through the skin, three or four inches in length, beginning above the neck and running along the course of the tumors [as indicated by the dotted lines in the figures]. He then cuts through the successive layers before described, by pinching up a small bit at a time with the forceps, and cutting horizontally through it under their points. This process is repeated until an opening is made to the sac, which can always be distinguished by its bluish appearance. The sac itself is to be opened in the same manner by pinching up a little bit, and cutting through it horizontally. The small director [Fig. 136] is then inserted and an opening made sufficiently large to admit a finger. The fore-finger of the left hand is introduced [as shown in Fig. 137] and passed up to the neck of the sac to search for the strictures, which will generally be found at the internal ring; it may, however, be at the external ring; or there may be a stricture at each. The stricture is to be dilated to admit the finger into the abdomen. This is done by what is called a probe-pointed bistoury—or a similar knife, made for the purpose, not edged quite up to the point, and only for a short space below it (Fig. 138). The blade is passed up *flat-wise* (see figure 139) along the finger and pushed on through the stricture. Its edge is then turned

Fig. 136.

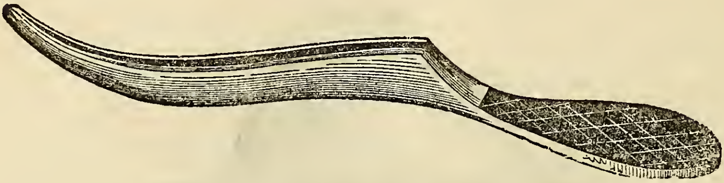


Fig. 137.

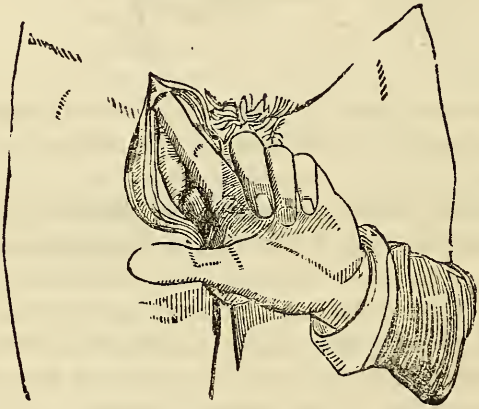
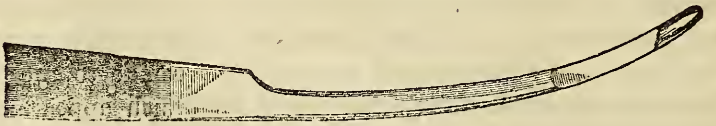
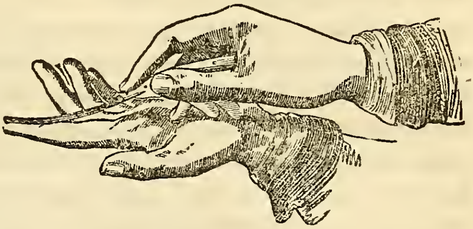


Fig. 138.



upward, cutting no more than necessary to admit the finger. The CUT must, in all cases, be made DIRECTLY UPWARD, parallel to the linea alba, whether it be in Direct or Oblique Inguinal Hernia, so as to *avoid* the epigastric artery. If there be no stricture in the neck of the sac, one may be found in the body.

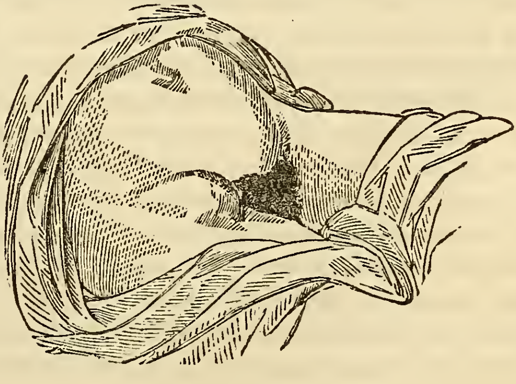
FIG. 139.



The stricture being thus relieved, and sufficiently dilated with the fingers, strict examination of the parts must be made; for, if firm adhesions have taken place, no attempt should be made at reduction; or if the protrusion has continued so long that fatty deposits around the part have accumulated to too great an extent, the hernia must be allowed to continue. All you can do in such a case is to let the wound heal, taking precautions against inflammation. When the bowel has mortified, care must be taken not to disturb the adhesions at the neck. The intestine must then be opened, and the mortified part taken out. The only chance is, then, that of an artificial anus.

For FEMORAL or CRURAL HERNIA, the skin is pinched up and divided by a simple incision (as marked out in the case represented in Fig. 140), or, as many prefer, a crucial or angular one—the safest way of making it being to run a narrow knife through the skin, with its back toward the hernial sac. The superficial fascia of the thigh with its fat, and the fascia

FIG. 140.



propria, must then be divided. Immediately beneath the latter and contiguous to the sac, may be another layer of fat, liable to be mistaken for omentum. The sac itself is usually very small, seldom containing omentum or serum; and must be cautiously opened, as it embraces the bowel very tightly. The stricture will generally be found at the inner edge of the falciform process. This must be slightly cut, for a line or two only, in an UPWARD and somewhat INWARD direction. If carried too far, the incision might penetrate the spermatic cord, or, in females (who are more liable to this form of hernia from greater breadth of pelvis), the round ligament of the womb. If that is not sufficient, a few fibers of Gibernat's ligament are directed to be severed, although there is great danger of wounding the obturator artery, which often encircles this ligament. When the hernia is freed, reduction is to be effected, as directed in the former case.

FURTHER OPERATIONS ABOUT THE PELVIS.

The ATRESIA ANI of new-born children is often but superficial, or strictly an IMPERFORATE ANUS. Though the integument is closed over it, the end of the rectum can frequently be observed swelling beneath. In such a case a simple incision is to be made into it, and kept open with suitable means. In other cases there is only a narrow adhesion of the walls of the bowel, which may be carefully treated in the same manner. When, after sufficient delay, the rectum can not be reached, recourse *may* be had to

The operation for an ARTIFICIAL ANUS. This is sometimes necessary in adults after closure of the rectum from disease, or its opening into some other cavity of the pelvis. The least inconvenient place for this business, when there is a free choice, is the loins. An incision is made down to the descending colon, where it is uncovered by the peritoneum, just above the left crista of the ilium. The bowel is immediately attached to the lips of the wound by two ligatures, and an incision is then made into it, and the lips of the intestinal wound more closely united with those of the superficial one. In this part the patient ultimately gains control of the new organ, a complete sphincter being formed. In the left groin, where the operation used to be performed, it is much more dangerous, and the result less satisfactory.

About "*the* operations for Fistula in Ano, Hæmorrhoids and Prolapsus Ani," enough has been said or implied in giving directions for avoiding them. (See Lectures XXXIV and XXXV). Nothing but malignant disease would, in my opinion, justify a removal of part of the rectum; and then other means than the knife should also be used, if not solely relied on.

The Gluteal and Sciatic Arteries may be found for the purpose of ligating in case of wounds, by means of an incision, beginning for the former, an inch, and for the latter, two inches and a half, below the posterior spinous process of the ilium, and cutting toward the trochanter major, severing the gluteus maximus. These incisions have to be both long and deep, and it is often preferable to take up the external or even internal iliac.

The External Iliac Artery is reached by an incision about an inch above Poupart's ligament, and nearly parallel with it, but slightly curved downward from the ant. post, spinous process of the ilium to the upper angle of the ext. abd. ring. After the obliquius externus has been divided, the other muscles separated from the ligament, and the fascia transversalis as well as cellular connection of the external iliac vein with the artery *torn through*, the needle is passed round the artery, behind the spermatic cord.

The internal and the common iliac, and even the great arterial reservoir, above its first bifurcation, have been ligated. The incision and mode of proceeding is the same for all three. A longitudinal cut of several inches, reaching nearly to Poupart's ligament, is made near the external border of the rectus abdominis, the muscles and transverse fascia beneath, being carefully divided down to the peritoneum, the latter is separated from the iliac fascia; and when the internal iliac is found at the brim of the pelvis, it can be secured; or the finger guided by it to the common iliac, and by that to the aorta itself, if the intention is to venture so far.

LECTURE LXI.

LITHOTOMY AND OTHER OPERATIONS ABOUT THE PUBIC REGION.

Urinary Deposits, Calculous Diathesis, etc.

Stone or gravel may accumulate in the kidney or ureters, as well as in the bladder; or, after escaping from the latter, may be first discovered as an obstruction in the urethra.

Chemical investigations into the varieties and causes of these troublesome and dangerous formations, seem to prove, what might have been expected, that they are results of general diseased conditions; and to be obviated, as a general rule, by whatever purifies the system and corrects and invigorates the general health. Air, exercise, bathing, and *other* tonics, are almost always indicated. Even in the case of the phosphatic salts, precipitated from the urine by insufficient acidity, ascescent or fermenting articles of diet, and acidity of the stomach, are to be carefully avoided. In other varieties, alkaline medicines are clearly indicated.

In women, calculi of considerable size easily pass the shorter urethra, and that channel may be artificially dilated for the purpose. The male urethra, when dilation and other means fail, has sometimes to be opened at the membranous portion (the stone being pushed back there if required.)

Calculi in the kidneys are apt to occasion heat and pain in the loins, hæmaturia and nephritis. If they do not escape into the ureters, they cause atrophy or ulceration of the parts. The *passage* of calculi through the ureters, toward the bladder, is accompanied by very painful and distressing symptoms, coming on and going off *suddenly*, though they may last a day or two. The pain is in the groin and testicles, which are retracted spasmodically, as well as in the loins. Relaxants and diluents are of much avail at these times.

The symptoms of stone in the bladder are very various, both in kind and intensity. They are chiefly referable to irritation of the neck of the bladder or retention of the urine. They may not be sufficient, or sufficiently noticed, to lead to a discovery of the cause for years after their commencement, and until all means but lithotomy (if not even that operation) are unavailable. There is pain in the glans as well as at the origin of the urethra, particularly after urinating. The stoppage of urine is apt to be sudden, and the patient often discovers that he can succeed in renewing the flow by a change of posture.

In all suspected cases, examination should be made, as we have in art, one simple and

DECISIVE SYMPTOM. The *sound*—a solid metallic rod, or the "director" used in lithotomy—is introduced, and the patient placed, if necessary, in different postures, and the vesicle searched with it, till the metal and stone are *heard* and felt to come in contact.

OPERATIONS FOR STONE.

Having satisfied yourself from the foregoing symptoms, and from *sounding*, that there is a stone in the bladder, your next step is to decide upon the operation for its removal. Two modes are offered: Crushing with the lithontriptor (called lithontripsy) or cutting in for it with the knife or gorget, called lithotomy. Where circumstances are all favorable for *lithontripsy*, this new method is always to be preferred. Yet there are so many conditions in which this plan is impracticable or improper, that *lithotomy* must be performed in a majority of cases, notwithstanding it has been claimed by some, that the crushing is a complete substitute for the more formidable operation with the knife.

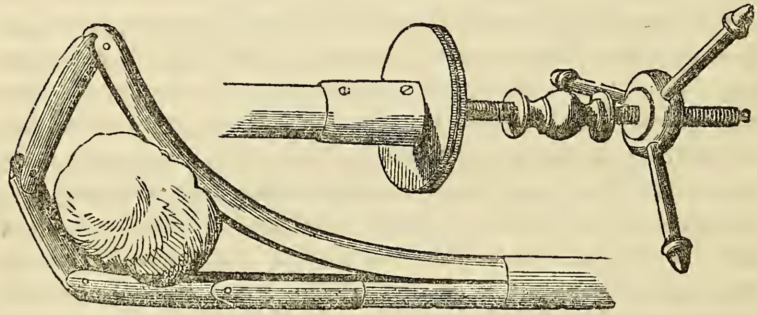
For the use of the lithontriptor, the patient must be an adult, or nearly so, as in younger persons the urethra is too small to admit an instrument strong enough for the purpose. There must be no stricture of the urethra, and no enlargement of the prostate gland so as to obstruct the passage of the instrument. There must not be much irritability or diminution of the bladder, so that there will be sufficient room to work the instrument. The stone must not be of a large size, nor of the hardest kind, such as that called the mulberry calculus. There must be no adhesion to any portion of the bladder.

The best prospect of success in the use of the *lithontriptor* is, when the urethra and bladder being sound, the prostate in a natural condition, and the patient an adult, the stone is both small and soft. If any of these conditions are wanting, lithotomy is the only resort. Children are, of course, excluded from the list of cases for lithontripsy, by the narrowness of their urethra.

For the Operation of Lithontripsy,

The patient is placed on a table covered with quilts; the hips are elevated so as to throw the stone back from the mouth of the urethra, and the bladder, if not already full of urine, is to be nearly filled with tepid water, injected through a catheter. The urethra must have been previously dilated by the repeated use of bougies, increasing the size, from time to time, for a week or more, until the *lithontriptor* will enter. This intrument (Fig. 141) is then warmed, oiled, and passed in, closed up, as a common sound or bougie. When it comes in contact with the stone, the movable half is pushed in so as to open the blades at the joints, and form a sort of firm loop or noose. Rotate this from side to side, and tighten a little occasionally, so as to grasp the stone whenever it gets into the loop. As soon as it is fixed between the blades, as represented in the above drawing, which will be known by your inability to draw the sliding half back, turn gradually upon the arms of the screw, which slowly, but with great force, draws out the slide, and brings the blades together. When the stone gives way, and the instrument closes, re-open it and maneuver as before to catch any large fragments that may remain; continue this until all are finely crushed; then withdraw the instrument, and let the patient turn over

Fig. 141.*



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*Drawn and engraved by G. K. Stillman, from the instrument as manufactured by Max. Wocher, both of this city.

with his face downwards, and evacuate the fluid from the bladder as freely and rapidly as possible: it will carry off with it a large portion of the powdered stone. If the urethra and bladder are not too irritable, inject the bladder full of tepid water immediately and let it pass off. This may be several times repeated, if the patient can bear it, until all the fragments are washed away. If there be too much irritability in the parts for these injections, you must depend on the natural evacuations. These, however, may be much aided by a free use of demulcent diuretics, such as an infusion of Althæa Officinalis, Eupatorium perpureum and Juniper berries, equal parts, drank to the extent of two or three pints a day.

Lithotomy.

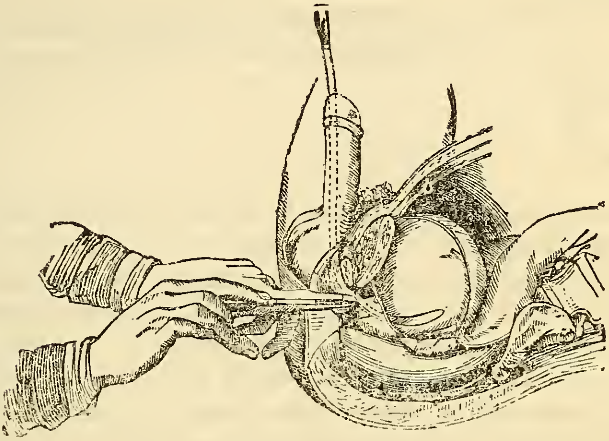
Before attempting this operation, or even the preceding one, the patient's general health must be as far as possible restored, and all irritation of the urethra, bladder and kidneys allayed. For the latter object an infusion of the Althæa Officinalis is the best. It should be taken to the extent of a quart or more a day. The Eupatorium Purpureum, used in the same manner, will answer a good purpose. A strong infusion of the Pyrolia Rotundafolia produces an excellent effect. So also does the Polytrichium Juniperinum (Hair Cap Moss). An infusion of the seeds of the common Sun Flower (Helianthus Americanus) is a most excellent mucilaginous diuretic. It is soothing to the parts and increases greatly the discharge of urine. Any of these, or a combination of several or similar articles, should be used freely. The healthy action of the skin must be promoted. The patient should diet but not *starve*, for a week or more before the operation. He should be kept quiet and take less than his usual amount of food, free from stimulating condiments. Let him use cold water, but no alcoholic beverage.

Several different modes of operating have been adopted, but the LATERAL OPERATION is now almost universally preferred. It is the mode invariably adopted by one of the best, and doubtless the most successful lithotomist now living (Prof. Dudley, of Lexington, Ky., he having lost only one case in nearly two hundred operations). The bowels having been evacuated by an enema, and the bladder being nearly full of fluid (which should be insured by tying up the penis for sometime before, or injecting in tepid water through a catheter) the patient is ready for the operation. Place him upon his back, on a table covered by quilts or mattress. The table should be of such a hight as to enable the surgeon to work easily while sitting in a chair. Flex the thighs on the abdomen and the legs on the thighs, separate the knees and make him grasp the soles of his feet with his hands. Then fasten the feet and hands together by bandages, first put around the wrists by a noose. Now give him the Ether or Chloroform until he is insensible to pain, unless you should choose to operate without this advantage for *both.* It is better also at this stage to apply a *bandage* around *each arm* and *thigh*, tightly enough to stop the return of the venous blood as far as practicable, so that a large amount of blood will, for the time, be retained in the limbs, and thus being withdrawn from the general circulation, will greatly lessen the hæmorrhage during the operation. The hæmorrhage from this operation is not unfrequently dangerous, especially if the pudic artery be cut, as sometimes happens.

Having thus prepared his patient, the surgeon introduces the staff, which is a steel instrument, like the sound, though a little larger, with a groove in its convex surface. An assistant on each side holds the thighs apart, and another holds the patient's head and shoulders firmly. A third holds the scrotum to one side, and supports the staff perpendicularly, drawing it up firmly against the pubes. A fourth assistant stands by to reach the surgeon his instruments.

The operator before beginning, introduces a finger into the rectum, not only to ascertain that it is empty, but to stimulate it to contraction. The perineum must be previously shaved clean. The knife used has the posterior two-thirds of the edge blunt: it is somewhat longer than the common scalpel. This enters the perineum about midway between the scrotum and anus, on the left side of the raphe, and is brought downward and outward, dividing only the skin and superficial fasciæ to about midway between the anus and the tuberosity of the ischium. The section is then deepened *by the finger*, for the purpose of security to the rectum and to bloodvessels. Muscles also should be separated rather than torn. If any portions of the levator ani resist the finger they must be divided by the knife. So also with the transverse perinei, though that muscle if often wanting. The point of the knife has to be applied with great care to any part that resists dilatation. The finger nail is lodged in the groove of the director, just in front of the prostate and behind the triangular ligament. The knife is made to perforate the urethra and enter the groove behind the finger (as shown in Fig. 142), which simultaneously follows it,

FIG. 142.

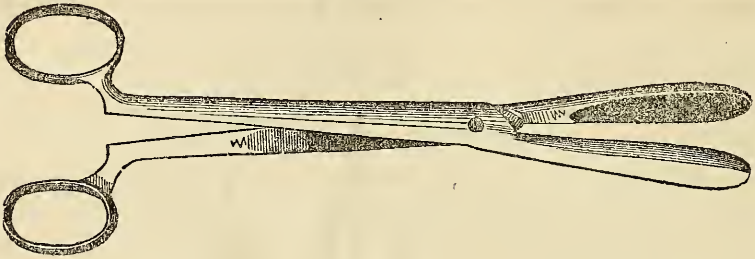


entering the urethra, which the knife divides far enough for the purpose. The finger moves freely on the dilatable substance of the prostate. The base of that gland is not divided; and the ileo-vesical fascia is left entire, to prevent the danger of urinary infiltration. An incision just large enough for the entrance of the finger can be easily dilated for the exit of ordinary sized calculi. The rule in this "lateral operation" is "a free external wound, and a small internal one." The wider the former the shallower need be the latter. Care must be taken in withdrawing the knife, not to endanger the pudic artery by bringing it too near the ramus of the ischium.

During the dilation of the deep wound by the finger, urine escapes; and commonly, the stone or stones descending with it, can now be distinctly felt. The staff is gently withdrawn; and if the stone is found too large to pass through the opening already prepared, a straight probe-pointed bistoury can be passed over the forefinger still in the wound, dividing the prostatic portion of the urethra on the right side as well as on the left, and then dilating as before. This "bi-lateral" incision can be made in the first place, when the calculus is known beforehand to be so large as to require it.

The finger is kept in contact with the stone until it is seized by the the forceps (represented by Fig. 143). These should be

FIG. 143



large enough in the blades to hold the calculus by as many points as possible, and long enough in the handles to furnish sufficient leverage; while for other obvious reasons, it should be as small as will meet these conditions. To lessen the chance of the stone's slipping, the blades of the instrument may be lined with cotton cloth. If the stone is not immediately clutched, the point of the forceps should be advanced and depressed to the part where it is most likely to be found. The object being seized, it is to be turned round with the forceps, to be certain that no part of the bladder is included, and then elevated and taken out, the finger being again inserted between the blades of the instrument, to ascertain that the calculus is in the best position, or to put it so if required. Its longest diameter being adjusted in the axis of the instrument, and that in the direction of the axis of the pelvis, obliquely downward, extractive force is slowly applied, the forceps being at the same time moved to and fro, forward and backward, to secure further dilation. The handles are held together tightly enough to prevent the stones slipping, but not so strongly pressed as to risk its being crushed or broken. The finger must be used to prevent the bladder being pulled out before the stone, and separate any fibers of the levator ani or other obstacles in the external wound.

In rare cases the stone has been found lodged above the pubes, or in old men in a deep pouch of the bladder behind the prostate, requiring the use of curved forceps. Another difficulty occurs when it is more or less *encysted*. In that case, any projecting part is to be seized, and extraction from the cyst first attempted. This may be aided by the point of the finger or of a probe-pointed bistoury. The complication may require delay for the textures to relax.

In case of the stone being *crushed* by the forceps—or of a large number of very *small stones*—the *scoop* will be found a more available means of extraction than the forceps. The stone or fragment having been caught in this, is brought cautiously upward and steadied in its place as soon as possible by the point of the finger. After the crumbling, or where there is gravel, too minute to be all with certainty scooped out, the bladder is to be syringed out clean, either through the wound or through the urethra, the patient being placed in the sitting posture, for a good stream to run out easily.

The existence or absence of more calculi, may be ascertained with considerable certainty by the appearance of the one extracted. If it is found equally rough and uneven all round, it is evidence of never having been in contact with another hard substance. Smoothness of surface, on the contrary, particularly if partial, with a depression or flatness at the part or parts, will indicate the presence of at least another stone. With the "searcher" or the scoop used as a sound, every part of the bladder ought to be explored.

Previous to dressing the wound, a tube of sufficient caliber to allow the exit of blood as well as urine, is inserted and fastened by a "T" bandage. To favor this free escape, the patient is fixed in bed, with the shoulders elevated, and when urine is not passing out freely, the tube should be frequently cleared. The secretion as well as *excretion* of urine should be encouraged as much as possible. Give mild alkaline and mucilaginous diuretics, and avoid opium, should an anodyne seem indicated. Hyosciamus or cypripedium may be a good substitute.

One object of the tube is to prevent urinary infiltration; and as soon as sufficient plastic exudation appears to have occurred round it for this purpose, or when the urine begins to pass out at the urethra, withdraw the tube and close the wound as soon as possible. The wound heals as in ordinary cases, and generally requires only simple dressings. The first urine that passes through the natural channel causes great pain. If any obstruction or unusual delay occur, the catheter will have to be carefully used.

The chance of *final success* will depend much on the after treatment, though still more, perhaps, on the preparation of the patient for the operation. The success of Prof. Dudley has shown that this elsewhere formidable operation may be rendered a safe one. A repetition is rarely necessary, the removal of one calculus being said to change the diathesis. However this may be, *other* prophylactic measures are proper, and not likely to be neglected by the patient if he knows them.

Among the casualties which *in hospitals* and in most hands, make this a too often fatal operation, may be enumerated the dread or *shock* itself (generally to be avoided by the anæsthetic agents), *hæmorrhage* during the operation, and *hectic* from the inflammation and too copious suppuration of the wound. *Cystitis* and consequent peritonitis are generally to be avoided by proper care in the operation. The wound may continue open after the urethra has resumed its functions, constituting a peculiar and mild form of "fistula in perineo," or even fistula *in ano* may be a consequence of inadvertently wounding the rectum.

Urinary infiltration, when it comes on after the operation, may be mistaken for peritoneal inflammation, before the local damage occasioned by it is manifest. When *both* peritonitis and infiltration occur together, it is confessed by some to be a "perplexing" choice between the measures of depletion, supposed indispensable for the one condition, and the requisite support of the patient's strength for the other. "Antiphlogistics" that are *not* debilitating, relieve from all such dilemmas.

OTHER OPERATIONS ABOUT THE PUBES.

PUNCTURE, or paracentesis of the bladder

Has been resorted to occasionally for the discharge of its contents, where there remains no other means of effecting that object and preserving life. A trochar and canula are pushed into the bladder, as in *tapping* the peritoneum, either just above the front of the pubes or through the fore part of the rectum (in women, of the vagina). By sufficient care a permanent orifice for urine can be made at either point. There is more danger of infiltration and fistula in the rectal or vaginal, than in the supra-pubic operation.

CATHETERISM OF THE URETHRA,

For the evacuation of the bladder, is so much more frequently performed than that of any other channel, that the instrument for the purpose, is called the "catheter." For its use on the female, directions are always given in books on Midwifery. The operation on the male, is sometimes less simple. It is best to have the patient on his back, with the shoulders somewhat elevated, and the penis held at right angles to the body till the point of the catheter is at the arch of the pubes, and then depressed so as to be parallel with the thighs, when the instrument will slip easily over the triangular ligament and into the bladder. In old men, owing to enlargement of the third lobe of the prostate, the catheter requires to be more elevated than in ordinary cases. The patient should be cautioned not to strain or press upon the abdominal muscles. Any one acquainted with the anatomy of the parts can insert a straight tube as easily as a curved one. When the gum elastic catheter is used, it is generally necessary to have the wire in it to prevent its bending at any obstacle it may meet with.

CAUTERIZATION OF THE URETHRA.

Full directions for this modern and valuable operation were given in part first [see page 421—and a representation of the treatment, Fig. 20].

IMPERFORATE URETHRA.

This is an occasional congenital malformation or imperfection. The remedy is obvious; finish nature's work by pushing in a round trochar, followed by the canula and then by a catheter and keep the latter in place, till the new orifice becomes water-proof. Connected with this imperfection, and independently of it, there occur what are called,

HYPOSPADIAS AND EPISPADIAS,

Openings of the urethra, in the upper or under surface of the penis. The appearance in most cases is as if the lower part of the urethra were split up and down. When this is the case the parts may be pared or cauterized and made to adhere. Partial deformities of this kind are often borne with through life, the consequence being a scattering stream in urinating, and perhaps an inefficient projection of semen in coitus.

Phimosis and Paraphimosis.

These are analogous conditions, both resulting from a constriction of the prepuce, the former before the glans, the latter behind it.

Phimosis may be congenital or acquired—the latter manifesting itself either as an acute or chronic disease. The acute form often occurs from infiltration of the part during gonorrhœa or syphilis. When the contracted edge of the prepuce has slipped over the glans, but is too tight to be returned, forming a kind of ligature behind the corona, from the effects of which the substance of the glans swells still more—it constitutes *paraphimosis*. If, by compressing the glans and other simple means, it can not be got back, the constricting parts must be divided. The other difficulty may require for immediate relief a straight incision, and for permanent comfort or security, more or less of "circumcision."

A director should be used in making the longitudinal incision, and sutures are afterward necessary to keep together the mucous membrane and the skin that would otherwise contract beyond it. After the operation, a catheter should be kept in the part to protect and *preserve* the urethra.

Fig. 140.

Directions for the radical cure of Hydrocele by and *after* the operation, also before and *without* that expedient, were given in the first part of the course [see page 374.] The same may be observed of VARICOCELE [page 380] and some other diseases of the same parts.

AMPUTATION OF THE PENIS.

This is one of the simplest of operations, however terrible it may be thought. Almost the only occasion for it is improperly managed cancer, or other malignant disease (see page 257). When not performed very close up to the pubes, one cut of the knife suffices, it not being necessary even to draw back the skin for a flap, as the corpora cavernosa retract sufficiently as soon as divided. An assistant holds and compresses the stump until the ligatures can be applied; the two dorsal arteries, if not two or three others, have to be tied. Higher up, the operator cuts down to the arteries, and ties them before division—at least the six principal ones.

CASTRATION.

This final operation is thus performed: The scrotum having been shaved, the surgeon grasps it from behind, and putting the skin upon the stretch, makes an incision from the External Abdominal Ring to the bottom of the scrotum. If the skin is adherent to the testicle, hard, or otherwise in a diseased condition, two elliptical incisions may be made, so as to remove all the morbid part. The cord is next to be dissected out and the artery separated from the other parts and tied. The cremaster muscle and vas deferens should be separated from the artery nearly up to the abdominal ring, in order that their contractions may not carry the artery beyond your reach. The whole cord can then be cut off below the tie, and the testicle and all its covering beneath the scrotum dissected out. The wound must not be closed until all hæmorrhage has ceased. It should be closely watched for the first twenty-four hours, as there is a greater liability to secondary hæmorrhage than after most operations. In dressing the external wound, two or three sutures should be applied with adhesive straps between them to keep the lips in contact.

These directions apply to one testicle, and have, of course, to be repeated on the other, when the object is complete castration. All ought to know that the removal of one testicle has only the same relation to their peculiar function, which the loss of an eye has to the sense of vision. The principal occasions for the operation have been incidentally pointed out (see pages 258, 387). It is unnecessary to give other modes of operating, as that directed is the one which I, in common I believe, with nearly all surgeons of the present day, have always found effectual, and which long experience has settled down on as the best. The mode still laid down in some of the books for the removal of the testicle, together with the scrotum, need never be practiced, unless the greater part of the scrotum is itself incurably diseased. Some surgeons have occasionally preferred ligature of the spermatic artery, or excision of a part (with ligature) of the vas deferens, to the removal of the testicle. Either operation is followed by atrophy of the part. Castration for any other than remedial purposes need not, in the present age of the civilized world, be described; such things belong to history rather than surgery.

APPENDIX.

THE MEDICAL AGENTS AND COMPOUNDS

Referred to in the foregoing Lectures, especially the latter, being little known to the profession at large, and not directed in any other professed surgical work, may, for many readers, require more explanation than has been incidentally given. Of our general *preference* of vegetable agents to minerals, this is not the place to speak, further than to observe that the preference is neither *exclusive*, nor indiscriminately *inclusive.* We, by no means, sanction the use of *all* vegetable medicines; nor do we discard any article *merely because* it is of directly mineral origin. A few minerals, such as those which enter as constituent elements into the composition of the body, are at least as unobjectionable as any "purely vegetable medicines."

It has been made an objection to many valuable articles of our indigenous vegetable materia medica, that they are too bulky and inconvenient. Homeopathist's medicines are not the only ones that owe something of their popularity to their small doses. Many of our practitioners and pharmaceutists have set themselves to work to obviate this objection, by obtaining the medicinal properties of our standard remedies in a more concentrated form. Among them, Mr. Merrill, Eclectic Druggist, of this city, has been eminently successful. His peculiar opportunities, aided by unusual energy and familiarity with chemical science, has enabled him to separate several new principles, and obtain others, heretofore known, in a much purer state. His concentrated preparations of all kinds have been, for some time past, gaining a wide-spread popularity. He has already done much in diffusing the *practice*, if not the profession, of Eclectic Medicine, by presenting the long-neglected and despised power of our native remedies in an unquestionable form. These "new remedies" seem destined to do more than any other one thing can do, to diminish, if not abolish, the *general* use of those dangerous articles, against which our school has long protested.

It may be objected by lovers of medicine in its "natural pure state," as well as by equally exclusive advocates for potent minerals, that these concentrated remedies are also dangerous and poisonous. It ought to be more clearly understood than it appears to be, on either side of the question, that the *unanswered* objections to the use of mercury and other similar drugs, is not merely that they are minerals or even mineral poisons (in the most general sense of the word in which every medicine may be said to be a poison); but that they are poisons, inimical as well as foreign to the health-preserving principle—*lasting* poisons, which the system has no natural power of recovering from—poisons under the ordinary circumstances of their most "judicious use" *as medicines.*

I can not, perhaps, take better advantage of this opportunity of introducing these important articles to the notice of the medical and *pharmaceutical* professions, than by some

EXTRACTS FROM A PAPER FROM WM. S. MERRILL, A. M.

(Read by request before the Eclectic Medical Convention.)

* * * * "The most important class of these new agents is the Resinoids. We call them Resinoids, that is, as the word imports, 'resembling resins.' Like the pure resins, they are neutral in their chemical character, i. e., neither alkaline nor acid, so that they are not disposed to combine directly either with acids or alkalies, except with the latter in the same manner as oils do, forming saponaceous compounds. They are, like resins, softened by heat, and when cold and dry (unless combined with an oil, as many are), break with a vitreous fracture. Still they are not properly resins, for they are not properly liquified by heat alone, nor are they fully soluble in essential oils as the pure resins are.

"The process for procuring these is in theory very simple. It is in general to obtain a saturated alcoholic tincture of the root. To this add a large quantity of water, and distill off the alcohol. The watery menstruum holds in solution the gum, mucilage, extractive and most of the coloring matter, while the resinoid substance subsides, and is collected, washed and dried. Still the process requires in many points no little skill, and pharmaceutical experience for its success.

"The yield of these resinoids, from different roots, varies considerably as might be expected, but the average of these principles is from two to four per cent., or from half an oz. to one oz. from the pound of powdered root." * * * *

"The names by which I have designated these resinoids is found fault with. Some contend that they should be denominated the Resin of Podophyllum, of Macrotys, of Iris, etc., while others claim for them no higher appellation than that of extracts, but both denying their right to the termination of *in* or *ine*. Well, what is a name but an abbreviation to avoid the prolixity of a description of that which we wish to designate?"

"In records of abstract science it may be well enough to designate a thing by a description of its character, but when that thing becomes one of commerce and daily use, convenience requires that it be indicated by a single word, or at least, by the fewest practicable. Now, I claim to have as good a right to give names to things as any one else, especially if they are my own offspring. But I have not acted without authority."

* * * * "For the sake of perspicuity, I propose this as the mode, in part, of naming the proximate principles of vegetables, viz.: that the names of the alkaloids uniformly terminate in *a*, after the analogy of the alkalies and alkaline earths, soda, potassa, magnesia, etc. Thus we should have *Quinia*, *Morphia*, *Strichnia*, *Veratria*, *etc.* But that the names of the resinous principles or resinoids, should be made to terminate in *in*, after the analogy of the generic substance, resin or rosin, and accordingly we should write *Podophyllin*, *Macrotin*, *Jalapin*, *etc.* This rule I have adopted in naming the new medicinal principles which had not before received a settled designation."

"Of these new resinoids, the *Podophyllin* was the first brought into notice, and is still regarded as first in importance. It is a powerful cholagogue cathartic, substituting, and for all useful purposes, more than substituting the long-celebrated "Sub-murias Hydrargyri" of the Old School. The mixture of one part Podophyllin, rubbed well with ten parts, by weight, of refined sugar, is full as efficacious in its action on all the secretions, as an equal quantity of that formidable medicine, without danger of any of these permanent lesions, for which that has acquired such an unenviable notoriety. As an alterative and hepatic, it is best administered in small doses of one-eighth to one-half a grain, and repeated not oftener than from six to twelve hours. It should generally be mixed with sugar, syrup, or some soluble extract, to render it more readily diffused in the stomach, and thus guard against its local action."

"When used as a hydragogue or evacuant, it should be combined with Cremor Tartar, Compound powder of Senna, or some quick cathartic."

"The *Macrotin* is the resinoid medicinal principle of the Macrotys or Cimicifuga Racemosa. It is not a cathartic or emetic, nor properly a narcotic, although it often acts powerfully on the brain. It is the great alterative and tonic of the nervous and sexual systems. Hence, in Leucorrhœa, and other derangements of the uterine organs, it has, like the root from which it is obtained, proved almost a specific, and has been used with marked advantage in the analogous diseases of Gleet and Gonorrhœa. Also, in those forms of Rheumatism and Dyspepsia which depend on, or are accompanied by, a derangement of the nervous system it is used with much success. The dose varies much, according to the state of the system, and the idiosyncracy of the patient. Some females will easily take six grains a day in divided doses, while others can scarcely bear *one.* It is generally administered in pills, made up with Castile soap or Extract of Cypripedium, and given morning, noon and night."

"*Leptandrin* is the name I give to the resin of the Leptandra Virginica, or Black-root. I find no account of it in any work, and so far as I know, it had not been discovered till I prepared it about two years ago. It is a jet black substance, resembling in appearance pure asphaltum. Its peculiar chemical reactions, time will not here permit me to describe. Its medicinal action is that of a cholagogue and hepatic, with but feeble cathartic powers, and acting in small doses rather as a tonic on the primæ viæ. It hence fills a previously existing blank in the Materia Medica—a medicine that efficiently stimulates and corrects the hepatic secretions without the debilitating effect of copious alvine evacuations. It consequently becomes a desideratum in the treatment of summer complaint of children, and all chronic diarrhœas, and in all typhoid fevers. The dose is about double that of Podophyllin, and as it produces but little manifest disturbance of the system, it may be given with less caution. It combines very advantageously with that article when it is desirable to increase a little action of the bowels—say one grain of podophyllin to three or four of leptandrin. Various other useful combinations of these articles will suggest themselves to the judgment of the physician."

Various other of these resinoids and alkaloids have been obtained by Mr. M., but their value has not been so fully tested by actual use. Among them are Sanguinarin and Sanguinarina (both from the Bloodroot), the Iridin from the Iris versicolor, Cypripedin from the American valerian, the Hydrastin from the Golden seal, the Xanthoxylin from the Prickly ash, and the Asclepidin from the Asclepias tuberosa.

Several of these proximate principles, as the *Aletrin* from the Star grass or unicorn, were separated by Prof. King, of Memphis.

I have not space to follow Mr. Merrill in his account of other pharmaceutical improvements—such as the preparation of his fluid extracts and concentrated syrups.

DIRECTIONS FOR MAKING SYRUPS,

In the absence of a regular distilling or displacing apparatus

To make syrups, have your ingredients coarsely pulverized; make them quite moist with alcohol, and let them stand twelve or twenty-four hours; then add boiling water enough to cover the article, and let it stand one day longer; after which, strain and subject the dregs to strong pressure. Next boil, or rather simmer the dregs slowly in water, at nearly the boiling heat, for two hours, strain and press again. Add more water to the dregs, and boil until the strength is all extracted. Strain and press this last, and reduce the liquid down nearly to an extract. Add together all your liquids before obtained, and this extract, with the proper amount of sugar, and simmer it slowly down to the proper quantity. It should be kept bottled and corked tightly.

Syrups are usually made the strength of about eight ounces of the medicine to a quart of the syrup, when finished. This will vary a little, according to the strength of the medicines. Each quart to contain one pound of pure sugar and one gill of spirits (Alcohol, Brandy, Rum, Gin or Whiskey; or one and a-half pounds of sugar without the spirits, or with less. The dose at this strength is from one fluidrachm to half an ounce—more or less, according to the nature of the case and constitution of the patient.

Infusions should be made by adding one ounce of the medicine to one pint of boiling water.

Decoctions are commonly made by adding two ounces of the medicine to two pints of water, and boiled down to one pint. *Volatile articles* must be used in infusion, others may be boiled.

FORMULA.

Formula No. 1.—Irritating Plaster.

Take of Sanguinaria (Sang. Can.—Bloodroot), Podophyllum (Pod. pel.—Mandrake), Arum triphyllum (Indian turnip), Phytollacca decandria (Pokeroot), of each, pulverized, 2¼ ounces; Tar, 1 quart; Resin, 4 ounces. Boil the tar until its water is evaporated; add the resin, and let it melt; cool it a little, and add the powders while it is nearly boiling hot, and stir briskly until it becomes stiff. It is to be spread on thin, soft leather. (For further directions for its use, see Introduction, p. 17.) No one, after reading the foregoing lectures, will need to be informed of the high estimate put upon this plaster by the author, nor will any one doubt its value who has thoroughly tried it. It will be noticed that my directions, both for making and using the plaster, differ materially from those given by Dr. Beach. But this is the original mode. I follow the original plan adopted at Worthington by Dr. Morrow and his colleagues, as early as 1832, and found to be far the best by eighteen years' experience; while Dr. Beach's notice of the preparation was published for the first time in 1842. Experience in the use of both modes has decided me, and all who have made the test, in favor of the preparation as here given.

FOR. No. 2. BLACK SALVE, (Beach.)—Take of Olive Oil, 3 qts.; and common Resin and Beeswax, of each, 3 oz.; melt the articles together, and raise the heat as high as possible, without burning; then gradually add 2¼ lbs. of Red Lead, finely pulverized; or, for summer use, add 2½ lbs. of the lead; stir it briskly until the whole mass assumes a shining dark brown or black color—until the lead is perfectly incorporated with the oil, and not a particle of it can be seen. Then remove it from the fire, and continue to stir until it is nearly cold. When about blood warm, add pulverized camphor and oil of sassafras, each, 1 oz.

Hydragogue Cathartics.

FOR. No. 3 (A). COM. POWDER OF SENNA (Beach's Billious Physic.)—Senna, 1 lb.; Jalap, ½ lb.; Cloves, Ginger, or Spearmint, 2 oz., all finely pulverized. Dose, 1 to 2 drachms, to be taken in cold sweetened water. This will usually operate in two or three hours. The addition of four or five grains of Capsicum to the dose will cause it to operate in much less time. It is unirritating—produces free watery discharges, giving no pain, and continues its effects but a short time. It sometimes nauseates.

FOR. No. 3 (B). COMPOUND SYRUP OF SENNA.—The "Com. Powder of Senna" may be made into a syrup, so as to be taken in doses of from 1 to 2 fluidrachms. It operates in less time than the powder—is very thorough, though quite mild in its effect. It is a difficult matter to make it without dispelling the strength, as heat destroys the cathartic property of the senna. Mr. Merrell makes it by a process of distillation and displacement.

FOR. No. 3 (C). OTHER HYDRAGOGUE CATHARTICS.—Take equal parts of the "Com. Powder" or "Syrup of Senna" and Cream of Tartar. Dose, 1½ to 3 drachms, taken in cold, sweetened water

FOR. No. 3 (D). Senna (coarsely bruised) and Manna, of each ½ oz.; Anise or Fennel seeds (pulverized), and Epsom Salts or Cream Tartar, of each, 2 drachms, add 1½ pints boiling water, and simmer it slowly down to 1 pint—strain and sweeten. Dose, 1 tablespoonful every half hour until it operates This "tea physic" is very popular in some parts of the country. It may be made twice the above strength with care, and sufficient sugar added to form a pleasant syrup; a gill of alcohol added to the quart, will preserve it from fermentation. This is an excellent, mild and efficient cathartic. In dropsical affections you may add *both* the Salts and Cream Tartar, or a double quantity of either.

FOR. No. 3 (E). Podophyllin, 2 grs.; Cream of Tartar, 3 drs.; mix and triturate in a mortar until they are intimately mixed—divide into eight doses and give one every two hours. This may be made stimulate ing by the addition of 10 grs. of Capsicum to the mixture, which will render it more speedy in its operation.

FOR. No. 3 (F). Take of Fluid Extract of Juglans Cinerea (Butternut), as thick as molasses, New Orleans Molasses, and Brandy, of each, 1 pt.; Essence of Spearmint and Cream of Tartar, of each, 2 oz.; mix. Dose, 1 to 2 tablespoonfuls, This is an excellent tonic and stimulating hydragogue cathartic, as well as diuretic. I have used it with excellent effect in dropsy. It may be used in any case where hydragogues and diuretics are required, and where brandy is not objectionable, I usually direct it to be taken every morning, where I wish to keep up the effect, as in dropsical affections; where a strong effect is needed, it may be taken in doses of 3 or 4 spoonfuls with safety.

FOR. No. 3 (G). I will here speak of OILY CATHARTICS The *Castor Oil* is much used; and though it is most disgusting to the patients, no directions have been published, so far as I know, for rendering it more palatable, and its operation less distressing. It is a valuable remedy under some circumstances; but it often produces severe griping, and is so strongly objected to by many patients, that, for a considerable time, I ceased almost entirely to prescribe it. But finding, in some cases, much inconvenience in getting a substitute for the oil, I determined to try the effect of compounding—or seasoning it, if you please—with some of the aromatic volatile oils. For this purpose I took—Castor Oil, 1 pt.; and Oils of Wintergreen and Origanum, *of each*, ½ oz. The mixture was directed to be thoroughly shaken up. so as to be again well-mingled every time it was used. I found that those who had before taken the pure castor oil—and were so averse to repeating it that it was useless to make the prescription—would take this compound and not know what they were taking, expressing great satisfaction both as to its taste and effect. Any of the volatile oils, as peppermint, spearmint, anise, etc., may do as well as those I have used. This *aromatic castor oil* is more easily given in warm sweetened water, or "hot sling," where the alcohol is not objectionable. LINSEED OIL is an excellent cathartic. It should generally be scalded before used, and should have some of the stimulating volatile oils above-named mixed with it, the same as the castor oil. It is a good substitute for castor oil, and often much more preferable. The dose is about the same as that of castor oil. OLIVE OIL may be used in the same manner, and in some cases I have given it a decided preference.

FOR. No. 3 (H). CHOLAGOGUE CATHARTICS.—Take of Podophyllin, 10 grs.; Leptandrin, 40 grs.; White Sugar, 1½ drs.: Mix and triturate thoroughly in a mortar. Dose, from 5 to 10 grs. every three hours until free catharsis is produced.

FOR. No. 3 (I). MILD CHOLAGOGUE—Podophillin, 10 grs.; Compound powder of Rhubarb (For. No. 13), 1 dr.: Mix. Dose, 3 grs. every two hours, if active purging is needed, or 4 to 6 grs. at bed time, if only a gentle effort is desired.

FOR. No. 4 (A). ACETOUS EMETIC.—Take of Sanguinaria, Lobelia Seeds, and Ictodes Fœtida (Skunk's Cabbage Root) of each, pulverized, 1½ oz.; good Cider Vinegar, 1 qt.: Mix, and let it digest two weeks; or, if kept blood warm, one week will do; then strain and subject the dregs to strong pressure; or the dregs may stand in the bottom of the bottle. There is an oleaginous and a resinous principle in the Lobelia and a resinous in the Sanguinaria, which are not entirely extracted by this process—neither water nor acetic acid being a solvent for them. Hence, a portion of the active principles of these articles is left. To remedy this and to obtain the whole, make the powders quite moist with alcohol, and let them stand, tightly covered, for twenty-four hours. The resin and oil of the articles are separated and held in solution. The vinegar is then to be added, and when all the strength is obtained from the powders strained off, when, by the application of gentle heat, the alcohol may be driven off, and all the strength of the medicine left in the solution. The quantity of alcohol necessary to be used is not generally objectionable if retained. Dose, 1 dr. every ten or fifteen minutes, gradually increasing it up to 4 or 5 drs.: to be taken in some warm diaphoretic infusion, well sweetened. This is the cheapest and most popular, and under all ordinary circumstances, the best emetic of which I have any knowledge. If the acid is objectionable, it may be neutralized by adding saleratus before it is used. It often operates better thus neutralized.

For. No. 4 (B). Wine Emetic is made by substituting good Malaga wine for the vinegar. It makes a very efficient and pleasant emetic. It is to be taken as directed for the Acetous Emetic.

For. No. 4 (C). Emetic Powder.—Take equal parts of the *Lobelia seeds*, *Sanguinaria*, and *Ictodes fœtida*—all finely pulverized. You may add *Ipecac* if you please. Dose, 10 grs, to half a dr., given in some warm infusion sweetened; repeated every ten or fifteen minutes.

For. No 5. Sudorific Tincture (Beach), Ipecac, Gum Camphor, Virginia Snakeroot (Serpt. virg.), and Opium,* of each 2 oz.; Proof Spirits (Gin is best), 3 quts.; Mix and digest two or three weeks. Dose, ½ to 1 dr., to be given in some warm diaphoretic infusion.

For. No. 6. Compound tincture of Lobelia.—Take the Tincture of Capsicum, of Myrrh, and of Cypripedium pubescens (Lady Slipper), (the Etherial Tinctures are best), of each 1 pt.; Lobelia seeds, pulverized, 4 oz.: Mix, and shake it up thoroughly when used. This is the most powerful antispasmodic that can be considered both safe and prompt of which we have any knowledge. I have occasionally combined with it assafœtida, which I believe improves it. It should usually be given in doses of not over half a fluidrachm in warm water, or some medicated infusion, but may be given in doses of from one to two ounces, in cases of tetanus or convulsions.

For. No. 7 (A). Restorative Bitters (Beach's comp. bitters). Take Tamarack bark (Pinus pendula), 3 lbs.; Prickly ash berries or bark (Xanthox. frax.) 2 lbs,; Black cherry bark (Prunus virg.), and Seneca snake-root (Polygala senega), of each 1½ lbs.; Tanzy (Tanaset, vulg.), ½ lb.: Pulverize and mix. To 1¾ oz. add 1 pint of boiling water, and when nearly cold, half a pint of New Orleans Molasses and half a pint of good Gin (Whisky will do), put dregs and all in a bottle. It will be fit for use in twelve hours, though it should be agitated freely three or four times a day for several days—but drank off clear. Dose, from half to one wine glassfull half an hour before each meal. This is one of the best alterative tonics I have ever used, and will, probably, suit more cases than any compound of the kind in use. Other tonics may be added, but this seems to work so well in a large number of diseases, when a tonic of an alterave character is needed, that I rarely change the formula or make any additions, when this is used at all.

For. No. 7 (B). Tonic Bitters.—Take Wild cherry (Prunus virg.), Gentian, Columbo, and Black alder (Primos verticillitus), of each 1 oz.; Orange peel, ½ oz.: Mix, and add 1 qt. of boiling water and 1 lb. of

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* This formula is given as found in Beach's Practice. I have serious objections to the opium, and have not used it of late. In the place of the *two ounces* of opium, add *eight ounces* of Cypripedium pubescens, and you will have the tincture as good, if not far better for nearly all purposes, than with the opium, while you avoid all the bad effects that sometimes follow the use of the latter article, even in this small quantity.

Loaf sugar; when cool, bottle it, putting the dregs in with the rest, and add ½ gal. of Sweet wine. Dose, 1 wine-glassfull three times a day.

For. No. 7 (C). Restorative Wine Cordial.—Take of Spikenard (Aralia Racemosa), Solomon's Seal (Convalaria Racemosa), Gentian, Black cherry and Peach-root, of each 1 oz.; add boiling water, 2 qts., simmer slowly down to 1; strain, and add 2 oz. Loaf sugar and 2 qts. of Wine (native wine is best). Dose, 1 wine-glassfull three times a day.

For. No. 7 (D). Wine Bitters.—Take Hydrastis Canadensis (Golden Seal), White wood (Lirioden. Tulip.), and Bitter-root (Apocynum canabinum), of each 1 oz.; Capsicum, ½ oz.; Malaga wine, 2 qts. Dose, 1 to 3 table-spoonfulls three times a day.

For. No. 7 (E). Alterative Tonic Bitters.—Take of Black alder (Prinos vert.), Senecio gracilis (Life-root), Black haw (Viburnum prunifolium), and Sycamore bark (Platanus occiden.), of each, 1 oz.; Black cohosh (Macrotys race.), 2 oz.: pulverize and mix. To 2 oz. add 1½ pts. of boiling water, 2 lbs. sugar, and 1 pt. of gin. Dose, 1 to 3 table-spoonfulls three times a day. Excellent in all cases of debility, especially if there be much nervous irritation and cough, as when the lungs are affected in cases of fistula in ano, or lumbar abscess.

For. No. 8. Anti-bilious Pills.—Take of aloes, 2 oz.; Gamboge and Extract of Eupatorium perfoliatum, of each 1 oz.; Castile soap, ¾ oz.; Extract of Podophyllum, Lobelia seeds pulverized, and Extract of Gentian, of each ½ oz.; Capsicum, ¼ oz.; Oil of Cloves, 1 dr. Warm the extracts until they are quite soft, and add the dry articles in fine powder: mix the mass thoroughly in a mortar, and add the oil, working that in until intimately mixed—make up into 5 gr. pills. Dose, as an active cathartic, 4 to 6 pills; as an emeto-cathartic, 5 to 7; as an aperient, 1 to 3. These pills have been much used, and are very popular wherever they have been fairly tested. I have known an emeto-cathartic dose of them to break up a severe case of bilious fever in numerous instances.

For. No. 9 (A). Sudorific Powder (*or Infusion*).—Take of Sanguinaria, Hydrastis Canad., Bayberry (Myrica cerifera), and Sumach berries: Pulverize and mix. To 1 ounce add 1 pt. boiling water. Dose, 1 table-spoonfull every ten minutes, or as often as the stomach will bear it.

For. No. 9 (B). Sudorific Infusion.—Take Catnip and Asclepias, of each 1 oz.; Xanthox. berries and Mentha viridis, of each ½ oz.: Make a strong infusion, and drink freely, as warm as possible.

For. No. 10 (A). Emetic Powder.—Take of Lobelia seeds, Sanguinaria, Ictodes and Ipecac, equal parts: pulverize and mix. Dose, 10 to 15 grs. every fifteen minutes, until sufficient effect is produced; taken in warm ginger tea.

For. No. 10 (B). Emetic Infusion.—Take of Lobelia, Eupatorium perfoliatum (the herbs), and Chamomile flowers, equal parts: Make a strong infusion; sweeten. Give 1 table-spoonfull every ten or fifteen minutes.

For. No. 11 (A). Alterative Syrups.—Take of Stillingia (S. sylv.), 1 lb.; Corydalis (C. form.), ½ lb.; Ampelopsis (A. quinq.,) ¾ lb.; Iris (I. versic), ¼ lb.; Mix and make 5 quarts syrup Dose, 1 to 3 tea-spoonfulls four times a day (before each meal and at bed time).

For. No. 11 (B). Burdock (Arct. lap.)—Yellow parilla (Menis. can.), and Am. Sarsaparilla (Aral. nudic.), of each 1 lb.; Black cherry (Pr. virg.); Dandelion (Leon. tarax.), and Macrotys racemosa, of each

½ lb.; Guaiac shavings, and Leonurus cardiaca, of each ¾ lb.: Mix. Make 2 gals. syrup.

For. No. 11 (C). Comp. Syrup of Sarsaparilla.—Sarsaparilla, ¾ lb.; Liquorice-root, 1½ lbs.; Burdock, 1½ lbs.; Sassafras, ¾ lbs.; Guaiac, 1½ lbs.; Elecampane, 6 oz.; Rose leaves, 6 oz. Make a gallon and a half of syrup.

For. No. 11 (D). Another.—Sarsaparilla, 3 lbs;; Burdock, Sassafras, and Guaiac, of each 2 lbs.; Spikenard (Aral. racem.), Xanthoxylum, and Ex. Liquorice, of each ½ lb.; Extr. of Juglans (J. cathar.—Butternut), 1 oz.; Essence of Sassafras, 2 oz. Make four gallons of syrup.

For. No. 12. Hepatic Powder.—Take equal parts of Podophyllum, Sanguinaria, Iris, Hydrastis, and Apocynum. Dose, as an alterative, from 10 to 15 grs., at night.

For. No. 13 (A). Alkaline or Comp. Powder of Rhubarb.—Take of Rhubarb, Saleratus, and Peppermint or Spearmint leaves, equal parts. Dose, in powders, from ½ to 1 drachm. It is best used as an infusion of 1 ounce of the mixture to 1 pint of boiling water: Steep, strain and sweeten (8 oz. sugar to the pint). Dose, 1 table-spoonfull every half hour until an operation.

For. No. 13 (B). An excellent, mild, but active Cathartic—which does not seem in the least to debilitate, and which I have used with advantage and *security*, in such cases as the small-pox—may be made by combining equal parts of the preceding with the Com. Pow. of Senna. Make an infusion and sweeten: give a table-spoonfull every half hour or every hour.

For. No. 14 (A). Scrofulous Syrup.—Rumex crispus (Yellow dock), 4 lbs.; Bitter sweet (Celas. scand.), 2 lbs.; Scrofularia maryl., 1½ lbs.; Aralia spinosa (South pri. ash), and Menispermum canad., of each ½ lb.; Sanguinaria, ¼ lb. Make 3 gallons of syrup.

For. No. 14 (B). Stillingia (S. sylv.), 4 oz.; Iris (I.) vers., 1 oz. Ampelopsis (A. quf.), 2 oz.; Chimaphila umbellata (Pipsissiwa), ½ oz.

For. No. 15. Compound Tincture of Myrrh.—Take of Gum myrrh, pulverized, 10 oz.; Capsicum, 8 oz.; Alcohol, 1 gal. Digest it in a water or sand bath 18 hours, strain and subject the dregs to strong pressure.

For. No. 16 (A). Pulmonary Syrup.—Elecampane and Asclepias, of each, 1 lb.; Macrotys, Comfrey, Eupatorium perfol., Hoarhound, sycamore bark and Iceland Moss, of each ½ lb.; of Sanguinaria, ¼ lb. Make 3½ gals. of syrup, without spirits; and add the saturated tinctures of Ictodes fœt. and Asarum canad., of each 1 pt.; and the tinctures of Lobelia and Cypriped. pubesc., ½ pt. of each. Dose, one or two table-spoonfulls every 3 or 4 hours.

For. No 16 (B). Spikenard, Hoarhound, Elecampane and Comfrey, of each 1½ oz.; Caulophyllum, Macrotys and Ictodes, of each 1 oz.; Eupatorium perf., Lycopus and Ampelopsis, of each 2 oz. Make 2 gals. of syrup. Dose, from a half to one table-spoonful.

For. No. 16 (C). Expectorant Tincture (King's).—Take Lobelia seeds, Ictodes, Sang. Asclepias and Assarum can., of each 1 oz.; 1 qt. each of Water and Alcohol. Make a tincture and mix with half the quantity of simple syrup. Dose, a tea-spoonfull every three or four hours, if the cough is bad. This may be taken in alternation with the syrup above given.

For. No. 17 (A). Green Salve.—Take Resin, 8 oz.; Beeswax, 4 oz.; Lard, 6 oz.; Verdigris ground in oil, thick as tar, ½ oz. Melt all together and stir until cold. Excellent for indolent ulcers.

For. No. 17 (B). Lard, 4 oz.; Beeswax, 2 oz.; Bayberry tallow, 3 oz.

For. No. 17 (C). Compound Tincture of Guaiac.—Take Gum Guaiac, pulverized, 4 oz.. Alspice, 4 oz.; Saleratus, 6 oz.; Alcohol, 2 qts. Digest one week and filter. Dose, 1 table-spoonfull three times a day. For Rheumatism, add tinctures of Macrotys and Xanthoxylum, equal parts.

For. No. 18. Hydragogue Cathartics.—See Formula No. 3 (A, B, C and D).

For. No. 19 (A). Rheumatic Liniment.—Take Tinct. of Capsicum, 2 oz.; Oil Origanum, 2 drs.; Oil Cinnamon, 1 dr.; Tinct. of Opium and Spirits of ammonia, of each, 3 drs.; Tincture of Camphor, 1 dr.: Mix.

For. No. 19 (B). Take Aqua Ammoniæ and Spirits of Turpentine, of each 4 oz.; Olive Oil and Gum Camphor, of each 2 oz.; Castile Soap, finely pulverized, 6 oz.; Mix.

For. No. 19 (C). Take of the Oils of Cedar, Cloves and Sassafras, equal parts—to be rubbed on the affected parts two or three times a day.

For. No. 20. Sudorific Powder, see Formula No. 9.

For. No. 21. Wine Bitters. Take Hydrastis canad., Whitewood, (Lirioden. tulipif.), Apocynum canab., Orange peel, of each, 1 dr.; Xanthoxylum berries, pulv., ½ dr.; Boiling water ½ pt., when nearly cold, add Malaga wine, 1½ pt.; Dose, ½ to a wine-glassfull, 3 times a day.

For. No. 22 (A). Adhesive Strengthening Plaster.—Take Burgundy Pitch and Mutton Tallow, of each, 3 oz.; Resin and Beeswax, 2¼ oz.—melt together, and add, while hot, 1 oz. of Sweet Oil; and when only blood-warm, 1 oz. of powdered Camphor, and ½ oz. each of the Oils of Cedar and Sassafras. This is an excellent article for the purposes for which it is ordinarily made, and may be used instead of any other adhesive plaster.

For. No. 22 (B). Simple Cerate.—Take equal quantities of Lard and Beeswax—melt them together.

For. No. 23. Diuretic Drops.—Take Sweet Spirits of Niter and Oil of Sweet Almonds, of each, 2 oz.; Balsam Copaiba and Alcohol, of each, 1 oz.; Oil of Juniper, Oil of Spearmint, and Oil of Turpentine, of each, ½ oz. Dose from 1 to 2 fluidrs., or teaspoonfuls.

To Make Gum Shellac Splints.

Take Gum Shellac, finely pulverized, 1 lb.; 90 per cent. Alcohol, 1 qt. Mix, and let it stand exposed to a moderate heat for forty-eight hours, when the gum will all be dissolved. Then saturate woolen cloth in the solution, and let it dry to evaporate the alcohol. To apply and fit the cloth to any part, first cut it the proper shape, then hold it before a fire or hot stove, or dip it in boiling water, when it will be as soft and pliable as any cloth. Apply it to the part as soon as it is cool enough not to burn. You can then fit it in any shape you please, and hold it a minute or two, when, by cooling, it will remain exactly as first fixed. If you wish to strengthen the splint, take two pieces of the saturated cloth, spread one side of each with a thick coat of the solution, by a common paint brush, and let the alcohol evaporate as before; then apply these two sides together, and press them with a hot flat-iron or tailor's goose until they are perfectly welded together. You can repeat this operation as many times as you please, to make your cloth as strong as can be desired for any purpose.

Sesqui-Carbonate of Potash—or what Dr. Beach calls "Vegetable Caustic"—is directed, in "Beach's American Practice," to be made by evaporating the lye of hickory or oak ashes to dryness, and pulverizing it. If high heat is applied in this mode of making the caustic, after it becomes very thick, it will be made too strong for ordinary use, being so strong as to destroy healthy parts. If care be taken not to apply too much heat, the product will be a very mild caustic—chemically, the *sesqui-carbonate of potash.*

Obtain your ashes by burning the wood in the open air or an open fireplace, taking them up each day, so that they will not be re-heated, and observing that the fire does not get very hot at any time, so as to heat the ashes red hot or melt them, as so heating will drive off too much of the carbonic acid. Have them perfectly clean; leach them with pure water, and evaporate the lye in a clean iron or porcelain kettle, over a slow fire. It should not be raised to the boiling point Let it simmer down until it is dry; then pulverize and bottle the powder. It will generally take three or four days, beside very close watching, to reduce the lye to a state of dryness, without applying so much heat as to render it too caustic. Mr. Merrill's mode of manufacturing the *sesqui-carbonate* seems to answer the purpose just as well, and where you have the proper facilities for making the *pure* bi-carbonate, is, doubtless, much cheaper. Some good practioners, however, who have used both, claim that the caustic made by the process I have given above, is better than that made of the potash, or pure bi-carbonate of potash, of commerce; though, chemically, they are the same. So far as I can judge from considerable experience with both, I see no difference in their effects.

Mr. Merrell has kindly furnished me with an account of his investigations and discoveries of the *chemical* properties of the "Vegetable Caustic," which is here subjoined in his own words:

"On turning my attention to the Pharmaceutical preparations of the Eclectic School, I found an article under the above name, made by evaporating to dryness the lye from clean hickory or oak ashes. This was said to possess peculiar virtues, and to be almost indispensable in the treatment of many obstinate affections. The question arose, in what consists its peculiar properties? It is hardly to be supposed that the perfect combustion of those two woods should leave undecomposed the tannin, or any other of those organic principles on which any medical quality could depend. The presumption, therefore, with me, was, that all the superiority of this over other alkaline preparations of potash, depended partly on the *purity* and partly on the *peculiar state of carbonization* of the alkali so obtained. If so, I could here, as in many other cases, imitate nature. Saleratus, I was told, is too weak; pearlash too strong; and both are irritating in consequence of the silicia and other earthy impurities they contain. The inference then was, from this, together with a little examination of the caustic obtained by evaporating the lye according to rule, that the article wanted was a pure alkali intermediate between the mono-carbonate and the bi-carbonate;

that is, the sesqui-carbonate. This I accordingly prepared, dried and powdered, and gave it for trial to those most experienced in its use, and it was pronounced good as any ever used.

" It is made first by preparing a *pure bi-carbonate* (for several methods for which see U. S. Dispensatory), and evaporating this to dryness in a clean iron vessel. A *half equivalent* of the carbonic acid is driven off at about the heat of boiling water, and the alkali is reduced from a bi to a sesqui-cardonate. A full red heat would drive off a further half equivalent to the acid, and reduce it to the state of pure pearlash or *mono-carbonate;* thus by increasing the heat in its preparation, we may increase its causticity if desired. Physicians at a distance, who can not obtain it ready prepared in a proper manner, can make it for themselves, by procuring the crystalized bi-carbonate of potash from the shops and thus calcining and pulverizing it; but they will find it cheaper to buy, when they can depend on getting a good article. I have lately seen some that was sold in this city, which is nothing else than common *pearlash* or salæratus, with all its impurities, powdered and put up. This is easily detected by the white earthy sediment left on dissolving it. When *pure* it dissolves entirely in water *without a sediment.*"

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B.P.L. Bindery,
OCT 4 1898